NOVEMBER, 1951

Industrial FINISHING

Publishing Monthly in the Interest of Product Cleaning and Finishing by Practical Publications, Inc., 1148 N. Meridian Street, Indianapolis 4, Ind.

In 1864 PRESIDENT LINCOLN proclaimed Thanksgiving a National Holiday. It has continued to be one of our great national observances.

In 1865 not quite one year later, the Lilly Varnish Company was founded. It has grown year by year since, and today is nationally known for its trade-mark, "The Lilly Key" and its slogan "With the Right Finish—You'll Finish Right."

The original Lilly Varnish plant 86 years ago.

THE Lilly FINISHES

VARNISH COMPANY

Indianapolis, Indiana • Gardner, Mass.

THE LILLY COMPANY • High Point, N. C.

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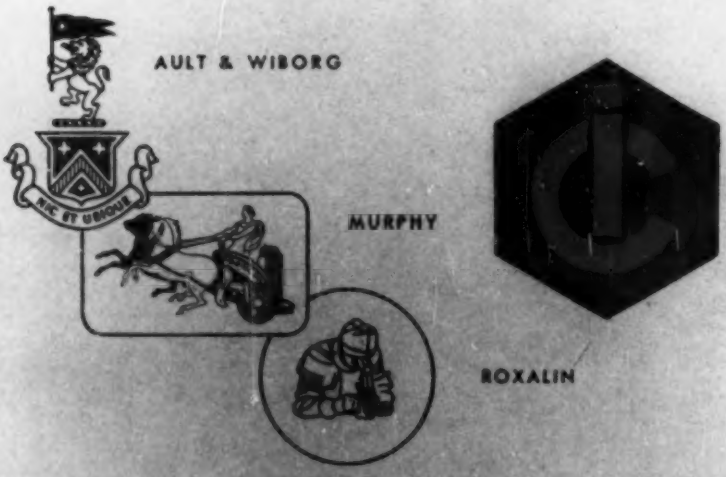
UNDERCOATS, VARNISHES, LACQUERS,
ENAMELS for METAL, PLASTIC, WOOD

To give your product a good start, give it an Interchemical Finish!



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Many leading manufacturers from coast-to-coast are now using the Hot Spray Process and Bede Paint Heaters in their finishing operations.

With Bede Paint Heaters quality of finish is greatly improved – fewer coats are needed – waste and overspray are reduced – time, labor and materials are saved – finishing room production is increased.

Consider the many benefits of using the Hot Spray Process and Bede Paint Heaters in your own finishing operations. Results in hundreds of plants have been excellent – in some cases phenomenal. Investigate for yourself. Write us today for Booklet listing users of Bede Heaters in many parts of the country.

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BEDE PRODUCTS Inc.

INDUSTRIAL FINISHING SPECIALTIES

4311-B RIDGE ROAD • CLEVELAND 9, OHIO

Bright Colors

ADD TO FUNCTION OF FLEETWOOD SWING LINE JUVENILE FURNITURE

The unique Swing Line Juvenile group by the Fleetwood Furniture Co., is safe and easy for children to use . . . tough enough to withstand their natural vigor. Brilliant colors to identify drawers for the youngsters are a prime factor in design. These lacquer enamel colors were created for Fleetwood in our studios. The result was a tough finish that could withstand hard knocks and dirty hands, as well as a fast drying finish that could meet a strict production schedule, profitably!

The Better the Finish, the Better the Buy

GRAND RAPIDS VARNISH CORPORATION

GRAND RAPIDS, MICHIGAN

Makers of the Famous Guardsman Finish and Guardsman Cleaning Polish

NOVEMBER, 1951
Vol. XXVIII, No. 1

CCA

A monthly magazine for finishing room and paint shop foremen, production superintendents, chemists, purchasing agents and company executives of industrial plants where production cleaning and finishing are major operations in the manufacture of parts and products.

Industrial FINISHING

W. H. ROHR, Editor P. C. BARDIN, Associate Editor

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President.....W. H. Rohr
Vice-President.....E. A. Dosch
Sec.-Treas.....R. E. Suits

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Eastern Representative:
C. A. LARSON
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New York 1, N. Y.
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28 TWENTY-EIGHTH YEAR OF PUBLICATION

More Light. With winter's shorter days, more electric light will be used in plant and office. What about lamp efficiency? Old lamps use the same amount of current, but produce less light. Are lamps and fixtures clean? Is there sufficient light for the work to be done? A thorough check-up and clean-up may save you money.

* * *

Bonding Metals with a rubber cement is the latest. The cement bonds two pieces of metal together with a bond which is said to be stronger than rivets or bolts and nuts. It is called "Plastilock", and was developed by the B. F. Goodrich Co.

When used to bond brake linings to brake shoes in motor vehicles and airplanes, the service life of the lining is increased about 75% due to the elimination of rivets.

* * *

Wood Chip Core for plywood is now available. The patented material, which has been made commercially in Germany for five years, is now being produced at the rate of forty million feet a year in a new $2,000,000 plant at Anderson, California. It is also adapted for use as wall paneling, and furniture as well as for plywood cores.

* * *

Trade Fair. The Chicago International Trade Fair will become a permanent institution in that it will be held each year. The 1952 Fair will be held at the Navy Pier from March 22 to April 6. For those who wish to display their wares to an international market, John N. Gage is executive director with offices in the Merchandise Mart in Chicago.

* * *

Color in Advertising. Profitable facts about the sales values of color in advertising and printed matter have been released by the Color Research Laboratory of Sun Chemical Corp., 10th Street and 44th Ave., Long Island City 1, N. Y.

In envelopes used in mail campaigns, for example, one manufacturer found that blue pulled 7.8% against 3.1% for white—better than two to one. Yellow pulled 6.8%, goldenrod 6.4%, green 6% and Pink 5.8%.

A publisher found that two colors on a mailing piece increased returns 10% to 15% over black and white, and that in relation to the returns the extra cost of color was negligible.

* * *

Better TV Reception. An electronic "glove" designed to keep ice off television transmitting towers and to give better winter reception is being installed on the high TV mast above the 102-story Empire State Bulding in New York.

A fraction of an inch of ice coating on any one of several critical points is sufficient to knock TV programs off the air. To overcome this weather hazard, a special heating system will

(Continued on page 8)

OUTSTANDING DOLAN PRODUCTS

NO. 1900 RUBBING OIL and CLEAN-UP POLISH

Eliminates haze or blush and produces a clear, clean, dust-free finish that will not finger-mark.

FASTAINS

Newest Standard Shades of red or brown
Mahogany, Maple or Cherry
Light or Dark Walnut, and matches for
any and every desired finish.
LIGHT-FAST—NON-GRAIN RAISING—
BRILLIANT—TRANSPARENT—
NON-BLEEDING STAINS

LACQUER-TYPE FILLERS

RICH, FULL COLORS, LIGHT FAST, eliminate lifting, bleeding and greying.

LACQUERS

#1350 HI-SOLIDS (35%)
#2100 HOT-R-COLD (35%)
#2150 COMPANION Sealer
WATER-WHITE Lacquer
Also regular lines of highest quality
27% and 21% Lacquers

Sold with an absolute GUARANTEE OF SATISFACTION

V. J. DOLAN & COMPANY, INC.

"Unquestionable Quality"
INDUSTRIAL FINISHES

1830 N. Laramie Ave. Chicago 39, Ill.
BErkshire 7-0100

Shower Stalls require a finish flexible enough to resist cracking under constant temperature changes, and hard enough to retain good gloss with daily cleansings by bathroom abrasives.

Such a finish has been developed by TOUSEY and is being used successfully by a leading shower stall manufacturer.

TOUSEY finishes for such fixtures can be had in various colors, pastels or solids—blending or contrasting with other units.* For more specific information about this and other types of finishes by TOUSEY write today . . . there is no obligation.

*Colors are custom made, matching samples or color charts perfectly.

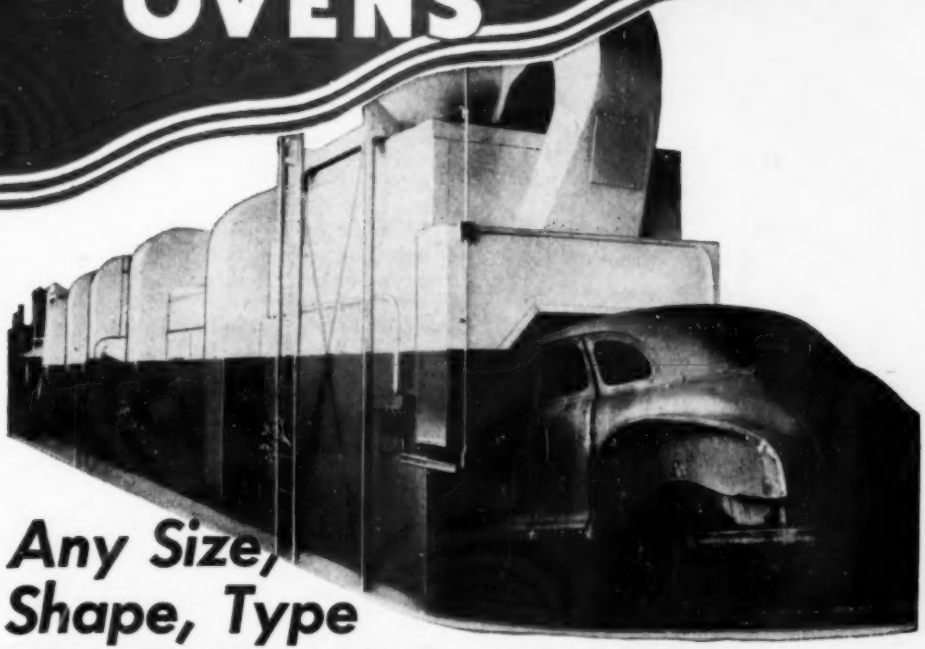
TOUSEY VARNISH COMPANY

520 WEST 25th STREET CHICAGO 16, ILLINOIS

Engineered to your production

Schmieg OVENS

CENTRI MERGE



Any Size, Shape, Type
FOR EVERY KIND OF WORK

Whatever your requirements, Schmieg drying and baking ovens are designed and engineered to give you highest efficiency at lowest operating and maintenance cost.

Conveyor or box type, for any installation arrangement, compactly designed to save valuable floor space, engineered to fit smoothly into your production plan, Schmieg ovens *make it easy* for you to turn out the very best paint jobs.

Schmieg ovens give you automatic temperature control, insure against hot spots, are meticulously insulated to prevent heat loss. Every operating essential has been carefully designed and engineered to enable you to safeguard product quality.

So we say—No matter what size, shape or type of oven you may need, for any kind of work, Schmieg ovens give you most for your money.

Consult Schmieg engineers today.

THE best AIR PURGE is CENTRI MERGE

Schmieg INDUSTRIES INC.

Engineers & Manufacturers

312 PIQUETTE AVENUE • DETROIT 2, MICHIGAN

SPECIALIZATION
Saves You Money
on
THINNERS

We make nothing but Thinners—blended Solvents, and nothing else. Naturally, we buy large quantities of solvents—at lowest prices. *Specialization* saves us money on overhead too—and these savings we pass on to you, our customers.

We know how to formulate Thinners to your requirements—been doing it for 26 years. We've satisfied big and little customers . . . let us show you how a Lacquer Thinner *SPECIALIST* can supply you with the *right* Thinner . . . and still save you money.

Just fill out form below and mail today. We'll work out a Thinner *especially for you*, and send a sample. Think we can do it for 85¢ or less a gallon too!

POTTER PAINT CO., INC.
CORTLAND, N. Y.
THINNER SPECIALISTS

The product we make is:_____
We use Lacquer Thinner for:
☐ Spray ☐ Dip ☐ Cleaning ☐ Other_____
We use Lacquer Thinner on:
☐ Metal ☐ Wood ☐ Other_____
We want it to dry:
☐ Fast ☐ Slow ☐ Medium

Name_____
Address_____
City_____ Zone____State_____

be installed on each of the units from which five and possibly more New York stations will transmit. The electronic system was designed by Minneapolis-Honeywell Regulator Co. to react to temperatures at the mast level.

* * *

Conveyor Belt. A real improved all-Neoprene conveyor belt designed especially for the food industry is announced by Baldwin Belting, Inc., 74 Murray St., New York 7, N. Y.

Sold under the trade name of "Supertex", this odorless, tasteless, non-toxic belt is also washable, oil proof and water proof. It is also resistant to acids, alkalies and heat.

* * *

Wireless Fire Alarm. According to Science Service, one Donald P. Decker of Belmont, Mass., has invented a radio operated fire alarm system which requires no special wiring.

As many signal transmitter units as may be needed are installed strategically around the plant or in places where a fire is likely to start, and a single receiver alarm unit is placed in a central location. Then the transmitters and the receiver are plugged into the lighting circuits. The system is activated by the ordinary lighting current and carrier signals are transmitted over the wires of the electric light system.

The signal transmitter unit contains a thermostat and a vacuum tube oscillator. A rise in temperature due to a fire causes the transmitter to send out its signals which are picked up by the receiver unit which sets off the alarm.

* * *

Portable Fluorescent. A tiny portable fluorescent lamp that produces intense but cool illumination of up to 450 foot candles of light is now offered. It contains two 4-watt fluo-

rescent tubes and all components within 2x6-in. drawn shade. The General Utility Lamp emits a flood of cool, diffuse light.

The jacknife support bracket contains three adjustable removable links, each 3-in. long.

Smooth contours and modern design in combination with a black wrinkle finish offer a rugged yet refined appearance. The lamps are rated at 7500 hours average life which normally represents over three years between lamp replacement.

* * *

Metal Inlaid Table. At a recent showing in New York of furniture executed by students of the School for American Craftsmen (a division of the Rochester Institute of Technology) there was a coffee table with a metal inlaid top. The top of this table is inlaid with a contemporary pattern made of thin strips of wood combined with bits of copper, brass, and colored enamel. The inlays are sculptural in form, and all of the lines are rounded.

Could this indicate the beginning of a trend that may become popular in better furniture of the future?

* * *

No Hands. Visitors to the Metal Show in Detroit, Mich., October 15 through 19, were treated to an exhibit of metal finishing with "No Hands" staged by Udylite Corp. You were shown how a loading device takes racks of parts to be plated from a conveyor, conveys them to machine and places them in position automatically. The racks of work are then taken through the entire plating cycle and returned to the automatic loader, unloader and conveyor, which removes the racks and replaces them on their original hangers. The entire operation is automatic with no manual handling required.

AVOID / THIS /

Remove finishes without any after-wash!

Save time and labor in stripping finishes by using NO-WASH Remover. This superior product not only does a fast, thorough job but *requires no after-wash of any kind!*

Apply NO-WASH over the finish and it's quickly reduced to a soft, easily stripped mass. No heavy scraping or sanding. Surface is left immaculate—all set for refinishing!

Have You a Removing Problem?

Through the past 35 years, we have solved removing problems for many top companies. Consult us if you have any difficulties.

NO-WASH REMOVER

WILSON-IMPERIAL CO.
125 Chestnut St.
Newark 5, N. J.

For complete information, mail the coupon.

WILSON-IMPERIAL COMPANY,
125 Chestnut St., Newark 5, N. J.

We are interested in stripping finishes from .....

Type of finish .....

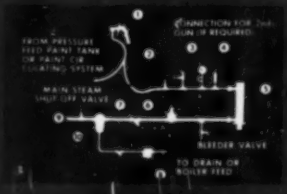
Name .....

Company .....

Street .....

City ..... State .....

From Steam Spray Gun


FROM PRESSURE FEED PAINT TANK OR PAINT CIRCULATING SYSTEM
CONNECTION FOR 2nd GUN IF REQUIRED
MAIN STEAM SHUT OFF VALVE
BLEEDER VALVE
TO DRAIN OR BOILER FEED

To Air Spray Guns and Outfits

KELLOGG-AMERICAN

gives you operating advantages that mean quality finishing at low cost

For over 40 years, Kellogg-American has worked in product research. Results: Such revolutionary painting equipment as the cost cutting steam spray gun; and such product innovations as the remarkable mobile Auto-Bake drying oven and the dual-pressure air compressor. It is Kellogg-American policy to bring you better product performance through genuine operating advantages that improve painting efficiency—cut painting cost—simplify painting equipment and techniques. Any of the thousands of users of Kellogg-American products or any Kellogg-American jobber can tell you that this policy is more than a statement. It is a fact that has reduced costs and improved production for many industries. It will pay you to talk to your Kellogg-American representative about your painting equipment problem. Why not write today.

Write for product folder | **A 100 on Micro-Spray Gun or A 200 on Steam Spray**

KELLOGG DIVISION, 94 HUMBOLDT ST., ROCHESTER 9, N. Y.
DOMINION BRAKE SHOE COMPANY, LTD., NIAGARA FALLS, ONTARIO

AMERICAN
Brake Shoe
COMPANY

QUALITY
Lacquers and Finishes
for WOOD and
METAL SURFACES
FURNITURE FINISHES
INDUSTRIAL LACQUERS
GOVERNMENT SPECIFICATION
COATINGS AND THINNERS
COAST LACQUERS cost less because we pass along to you the savings made possible by our immediate contact with the huge chemical plants of the Gulf Coast from which we obtain our superior raw materials at low cost. Write for information and prices.
CPL
COAST Paint & Lacquer Co. Inc.
P. O. BOX 1113, HOUSTON 1, TEXAS

Rollacoat for economy
GET FINER—FASTER FINISHING!

The benefits to be gained by using the Rollacoat method of applying finishes and protective coatings, to practically any type of flat materials, are three-fold. In the first place coating speeds are greatly increased over those of any other method and are governed largely by how fast the coated materials can be handled or dried. Secondly, the coverage per sq. ft. per gallon is usually at least 50% greater, the only loss being the paint removed from the rolls at the end of a run. In the third place you obtain finer quality of finish due to accurate control of thickness and eveness of coat.

The applications of Rollacoating are numerous. Top, bottom and sides of practically any type of flat material, whether sheet or coil stock, can be coated by a single pass through the machine.

Special equipment for cleaning, treating, coating, drying, and rewinding strip in continuous process can be constructed to special order.

GASWAY CORPORATION

Write or wire today for the 12 page Gasway illustrated book describing Rollacoat Finishers, their possibilities and limitation.

6463 N. Ravenswood Ave.
Chicago 26, Illinois

Streamline

USE THE MOST EFFICIENT OF ALL

White Motor Co., Cleveland, now has 17 Fostoria Infra-red ovens. The photo above shows one of three ovens used for finishing White 3000 series Power Lift Cabs. Baking requires only 9 minutes. Operating cost is reasonable — dry-off oven, 18' 4" long, 135 KW; prime oven, 29' 4" long, 144 KW; finish oven, 29' 4" long, 128 KW.

SAVES SPACE

Fostoria Infra-red ovens operate on a comparatively short cycle which results in smaller oven requirements. They may be suspended from ceiling mounts to eliminate floor space entirely.

SAVES TIME

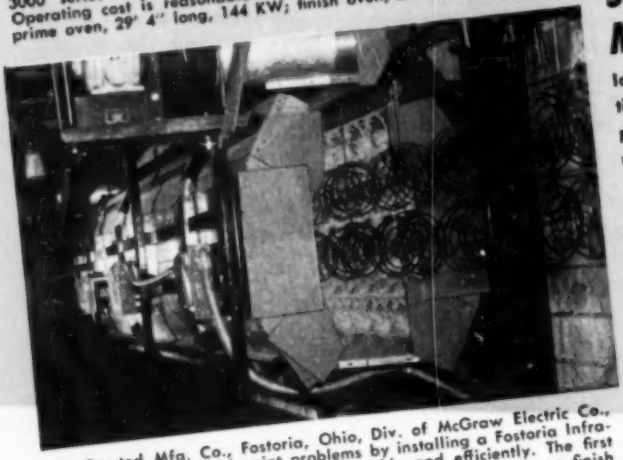
Reduces processing time from hours to minutes because of the inherent speed of Infra-red. There is no time lag in starting an oven. Heat is instantaneous.

SAVES MANPOWER— MANHOURS

Ideal for conveyorized production methods. Reduces expensive product handling. Turns out more pieces per day with ease, with less people.

CUTS COSTS

Faster production, lower operating costs, improved quality, result in lower "per piece" cost.



The Bersted Mfg. Co., Fostoria, Ohio, Div. of McGraw Electric Co., solved degreasing and paint problems by installing a Fostoria Infra-red oven. Fan guards are finished quickly and efficiently. The first trip through the oven, light oil is burned off. Then black japan finish is baked in 4 minutes. Production is 6,000 pieces per day. Oven is ceiling mounted saving floor space.

THE FOSTORIA

YOUR FINISHING PRODUCTION *Cut Costs*

INDUSTRIAL OVENS FOR FINISH BAKING

FOSTORIA INFRA-RED

You'll be amazed at the savings you can make in space, time, manpower and costs — the marked increase in the efficiency and quality of your finishing production—by modernization with a Fostoria Engineered Infra-red Oven. *A Fostoria Infra-red System out-performs any other equipment on the market today.* Fostoria exclusive engineered features guarantee the fastest, finest finish baking at lowest "per piece" production cost. Bring your finishing production facilities up to date by modernizing, now, with Fostoria Infra-red. Case histories of installations applicable to your production are available on request.

GET THE COMPLETE FACTS!

Write, today, for factual folder on the Fostoria Infra-red System. Technical data application to your operations will be included if you send us general facts about your problems.

★ At your request, a Fostoria representative will gladly analyze your production needs and submit definite recommendations with carefully forecasted results for your consideration.

INFRA-RED fostoria SYSTEM

PRESSED STEEL CORPORATION, Fostoria, Ohio

Oldest and Largest Manufacturers of Industrial Infra-red Ovens

PRODUCT FINISHING PROBLEMS?

HERE'S HELP in finding their causes and cures!

Bothered with sags . . . poor adhesion . . . improper drying . . . other product finishing difficulties?

This new Sherwin-Williams brochure offers a handy check list for determining causes and cures of most common finishing problems. It's part of the on-the-spot, local industrial service offered to manufacturers everywhere, through the Brown Label line of Sherwin-Williams Industrial Product Finishes and Sherwin-Williams Branches.

These products include a complete line of quality industrial lacquers, enamels and specialty finishes for both wood and metal . . . baking and air-drying.

Check this handy local source for your requirements . . . ask your nearby Sherwin-Williams Branch for free copy of Brochure CFP-513 described here, or write The Sherwin-Williams Co., General Industrial Division, Cleveland 1, Ohio.

PRODUCT FINISHES

SHERWIN-WILLIAMS

INDUSTRIAL FINISHES

4 shortcuts to SURER finishing results!

How a finish—or finishing system—adapts itself to the practical requirements of commercial production is just as important as how it performs on the finished product.

This is one of the important advantages buyers get with such production-proved Sherwin-Williams finishes as those listed here. They not only better fit the specific needs of the product to be finished, but of the production line as well.

If your production involves the finishing of furniture or wood products of any type, it will pay you to investigate the "shortcuts to surer results"—both in methods and materials—described in these new Sherwin-Williams Brochures. Write for those applicable to your problems. The Sherwin-Williams Co., General Industrial Division, Cleveland 1, Ohio.

THE SHERWIN-WILLIAMS CO.
General Industrial Division • Cleveland 1, Ohio
Please send Brochures checked below:

- ☐ **K-101 — KEMVAR** — A new advance in high resistance, heat-converting finishes for fine furniture.
- ☐ **T-103 — TV LACQUERS** — Extra-flexible, tough, mar-resistant materials in service on leading makes of TV cabinets.
- ☐ **H-102 — HEETCLAD LACQUERS** — Materials and systems for use with modern, cost-cutting hot spray methods.
- ☐ **H-104 — HOMOCLAD** — A totally unique sealer and system with highest properties of bonding and moisture sealing.

NAME_____
COMPANY_____
ADDRESS_____

SHERWIN-WILLIAMS
INDUSTRIAL FINISHES

Cleaning and Preparing

FOR THE APPLICATION OF

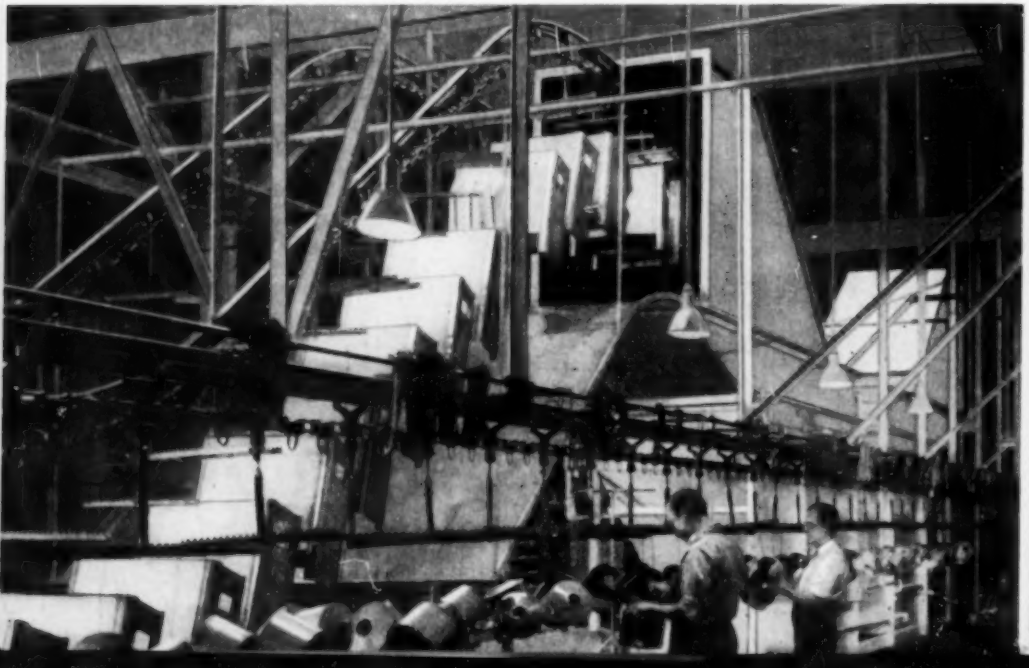
BEFORE ANY PRIMER, mist coat or single coat of paint, varnish, lacquer or synthetic enamel is applied to the bare metal surface of any part or product, that surface must be thoroughly cleaned. Otherwise there is likely to be lack of permanent adhesion of the coating to the metal. After a coating is applied to an unclean surface, there may follow such troubles as slow or uneven drying, blistering, flaking, peeling or discoloration.

BY P. C. BARDIN
Associate Editor

"Start with clean metal", is the first rule of metal finishing or painting. Our experience with and the performance of finishes on metal have shown and are still pointing to the wisdom of this vitally important Rule No. 1.

Metal surfaces may become soiled and smudged with dirt, oil, grease,

Large size vapor-spray-vapor degreaser with overhead monorail conveyor. This machine is designed to clean both large and small parts. Cleaned parts move on by the same conveyor to the finishing department. Photograph, courtesy of G. S. Blakeslee & Company.



Metal Surfaces

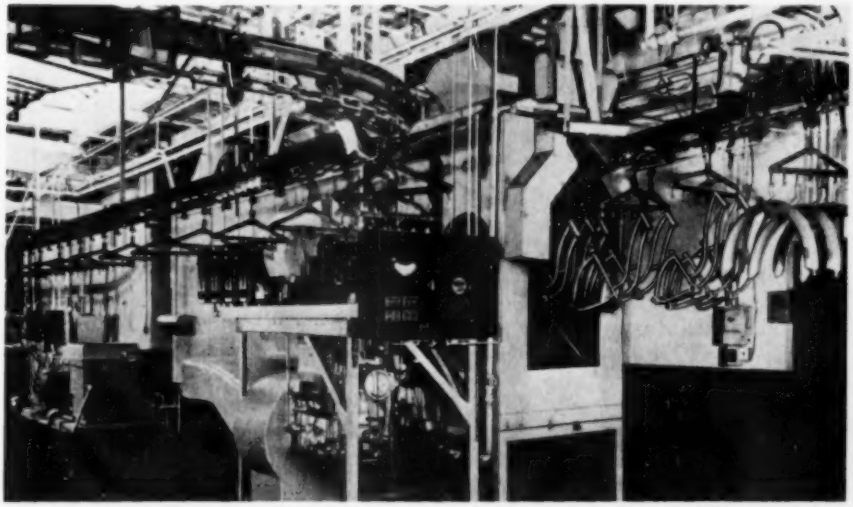
MODERN PAINT COATINGS

perspiration or other contaminants at the mill or foundry, during shipment and storage, and in the course of machine work where partial or complete fabrication occurs.

Purpose of Metal Cleaning And Surface Preparation

The purpose of metal cleaning and surface preparation is to clean the surface, prevent corrosion and increase the adhesion of applied organic coatings. The term "metal products" includes both ferrous (iron and steel) and non-ferrous metals (aluminum, brass, bronze, copper, zinc, nickel, tin) and embraces anything from a ballpoint pen cap to a diesel locomotive.

Obviously, with so large a field and with such wide divergence of materials, end use and life expectancy, no specific rule can be laid down except to say that in every case the metal surface must be clean before any coating is applied. By what method the surfaces are cleaned and to what extent surface preparation is carried depends upon the size and shape of the



Conveyorized 5-stage metal washer in which all bicycle parts are cleaned and rust proofed.

parts or products, the type of soil to be removed and the end use of the product.

What Phosphate Coating Accomplishes

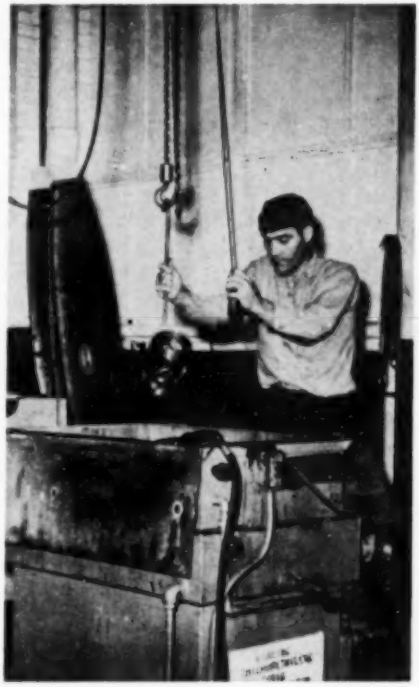
Within the past two decades the most outstanding development in metal cleaning and proper surface preparation is phosphate coating of iron, steel, aluminum, cadmium and zinc (never copper or chromium) products to prevent corrosion and to increase the adhesion of paint to metal. The phosphating of metal surfaces has other important functions too. First, the phosphate coating retards wear on bearing surfaces. Second, it facilitates drawing of metal, especially where deep draws are to be made. Finally, this coating, applied on sheet steel, increases adhesion of the paint film so that metal products may be successfully bent and formed after the finish is applied. Examples include venetian blind slats, bottle caps, crowns, closures and "tin" cans.

Before metal surfaces are phosphate coated they must be cleaned thoroughly.

Metal cleaning can be divided into at least eight classifications as follows: Alkali cleaning, emulsion cleaning, acid cleaning, solvent washing, solvent vapor degreasing, thermal degreasing, steam cleaning, and blast cleaning.

Alkali Cleaning and How it is Used

Alkaline cleaners are used in power spray washers, dip tanks and sometimes in hand brushing or wiping operations. In each case, cleaning with an alkali solution is



Metal parts being cleaned in degreaser.

followed by a water rinse. Power spray washers may have from two to five or even six stages, depending upon the extent to which surface preparation is to be carried. These machines are usually conveyorized, either by a continuous conveyor that carries the parts through the washer and on to subsequent painting and other operations, or by a self contained conveyor which operates within the washer only.

What method and equipment will be used depends upon the amount and nature of the soil, the size of the parts or products to be cleaned, and the volume of production. In

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- A corrosion resistant phosphating base for paint.
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- Hot immersion or spray process requiring ordinary steel equipment.
- Products treated: automobiles, cabinets, frames and tubes.
- Used on steel, iron, zinc and cadmium.

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- Used for friction surfaces of moving parts; oil-retentive, prevents galling and freezing.
- Meets Army Spec. No. 57-0-2C, Type II, Class A.
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- Meets Army Spec. No. 57-0-2C, Type II, Class B.
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- A cleaning phosphating compound.
- Hot immersion or spray.
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RUSTCLEAN 12 AND 15

- For removal of rust, scale, flux and preparation for paint.
- Wipe-on, spray or immersion process.
- Used on iron, steel, aluminum, cadmium and zinc.

Write for New Booklet on RUSTSHIELD 2

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some cases the quantity and nature of the soil may demand that the product be immersed in a tank to clean it properly.

In tank cleaning one of two methods can be employed—the still tank or the tank in which the cleaning solution is agitated. Certain types of soils may be removed by simply immersing the product in the cleaning solution. Other types of soils require a slushing action of the cleaning solution—accomplished by mechanical stirring or by agitation produced by the injection of compressed air into the tank of liquid.

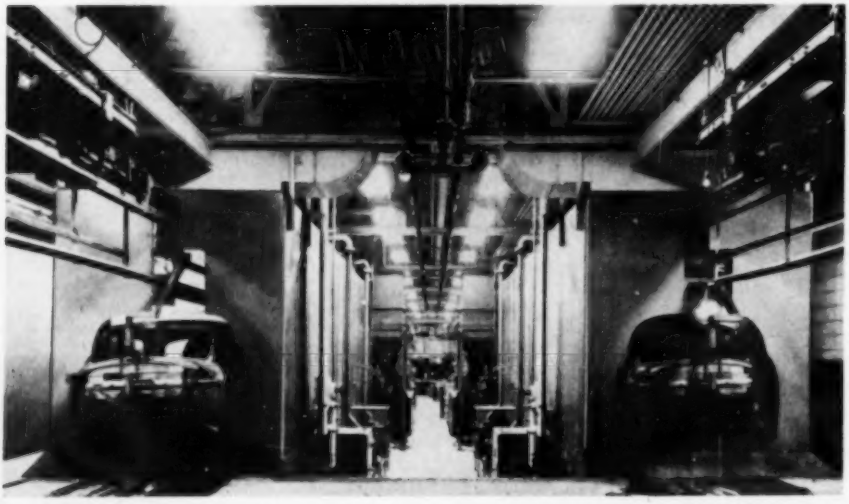
In emulsion cleaning the same equipment is used as in alkali cleaning — and the methods followed are generally the same.

The foregoing has been confined to ferrous metals. For non-ferrous metals a somewhat modified cleaning treatment is generally recommended. Zinc die castings may be cleaned with a dilute alkali solution (⅛ to ½-oz. per gallon of water); then a hot water rinse followed by a hot chromic acid rinse (2-gr. CRO_3 per gallon of water) for 30 seconds.

Aluminum products should be cleaned with either a mild alkali solution, as just mentioned for zinc die castings, or a buffered alkali solution.

Acid Solution Cleaning—Its Characteristics and . . . .

Certain types of soil found on cold rolled steel products may be cleaned with a phosphoric acid solution cleaner. This type of cleaner is especially useful in the removal of rust due to exposure between fabrication and finishing. [*To p. 24*]



Each of these twin 5-stage power washers has an overhead monorail conveyor which carries automobile bodies through washers for cleaning and phosphatizing the surfaces to inhibit rust and promote adhesion of paint. Photograph, courtesy of The R. C. Mahon Company.

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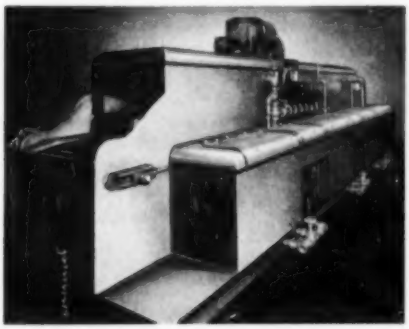
This comparatively mild phosphoric acid cleaner will etch the metal surface, thereby producing an improved base for paint finishes. However, this etching treatment should not be confused with the insoluble crystaline phosphate coated surface which I shall discuss later. Phosphoric acid cleaners will deposit on the metal, a phosphate film of from 5 to 10 milligrams per square foot of surface, whereas actual phosphate treatments of metal products which have been previously cleaned will produce phosphate coatings ranging from 100 to 4000 milligrams per square foot of surface, depending upon the solutions used and the method of application.



This straight line metal parts washer has a cross-bar type of conveyor which supports baskets of small parts or individual units of larger parts. Photograph, courtesy of Schmieg Industries, Inc.

Acid type cleaners may be used on metal products in one-stage corrosion-resisting power spray washers, in dip tanks, or by hand brushing or wiping. The latter method is generally used on large objects or where production is limited, and sometimes as a preliminary spot rust remover, preceding some other method of metal cleaning.

In another case the product may be large in size, so that hand brushing or wiping is the only practical means of cleaning the surfaces. This method is also used for ordinary size products where the volume of production is so small that it would not warrant installation of either dip tanks or a power spray washer. Where the type and quantity of soil to be removed lends itself to rapid removal and where the production is continuous and of large volume, a power spray washer may be used to advantage.

Manual Washing With Cleaning Solvents

Cleaning metal products by hand washing with naphtha, paint reducers and hydrocarbon-type solvents is still employed in some plants. However, this method and the materials have several weaknesses. First, the operation is slow. Second, being a hand operation, its effectiveness will depend entirely upon the personal care and skill of the operator who does the work. Third, the solvent being used soon becomes loaded with the oil and grease it removes, and unless clean solvent is substituted frequently, solvent washing will merely spread a thin film of unwanted oil all over the metal surface being washed. Fourth, the use of these solvents creates a serious fire hazard. Finally, these solvents do not remove rust; they do not provide a corrosion inhibiting surface, and they do not etch the surface of the metal to increase paint adhesion. [*To p. 26*]

Tape it with Behr-cat

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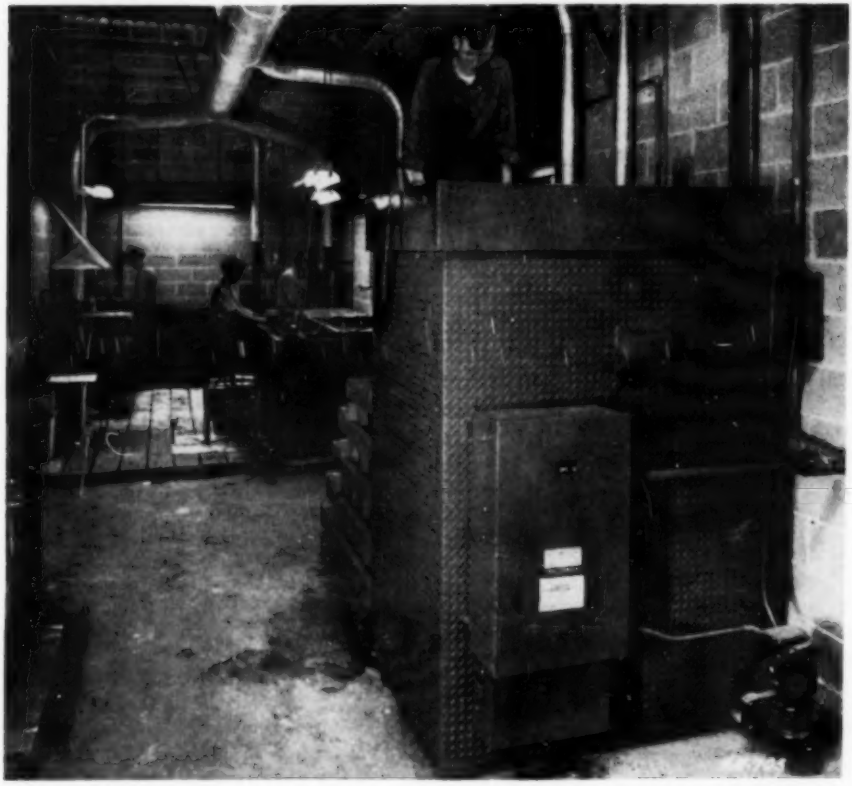
Solvent Vapor Degreasing And Variations

In most vapor degreasers, where chlorinated hydrocarbon solvents (generally trichlorethylene or perchlorethylene) are used, the parts or work to be cleaned are lowered into a vapor zone. Here the surface oils, grease, etc., are washed off with chemically pure solvents which rapidly condense on the surface of the metal. Regardless of how contaminated the heated solvent becomes, only pure clean solvent vapor ever contacts the parts being cleaned, therefore no thin film of oil is spread over the metal surfaces.

Soil removal by vapor degreasing depends more on solubilizing than on mechanical action. Because of this, coupled with the fact that condensation is dependent upon a difference in temperature between the vapor and the metal (and the temperature of light gauge metal rises rapidly), at least three or four



In the metal cleaning room, overhead exhaust piping removes fumes and vapors. The vapor degreaser is in right foreground. Photograph, courtesy of Kirk & Blum Mfg. Company.

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Road Builder stands out!

Caterpillar DW21 Tractor and Scraper in workout at proving grounds of Caterpillar near East Peoria, Illinois. An R-M enamel has to be good to stand up here!

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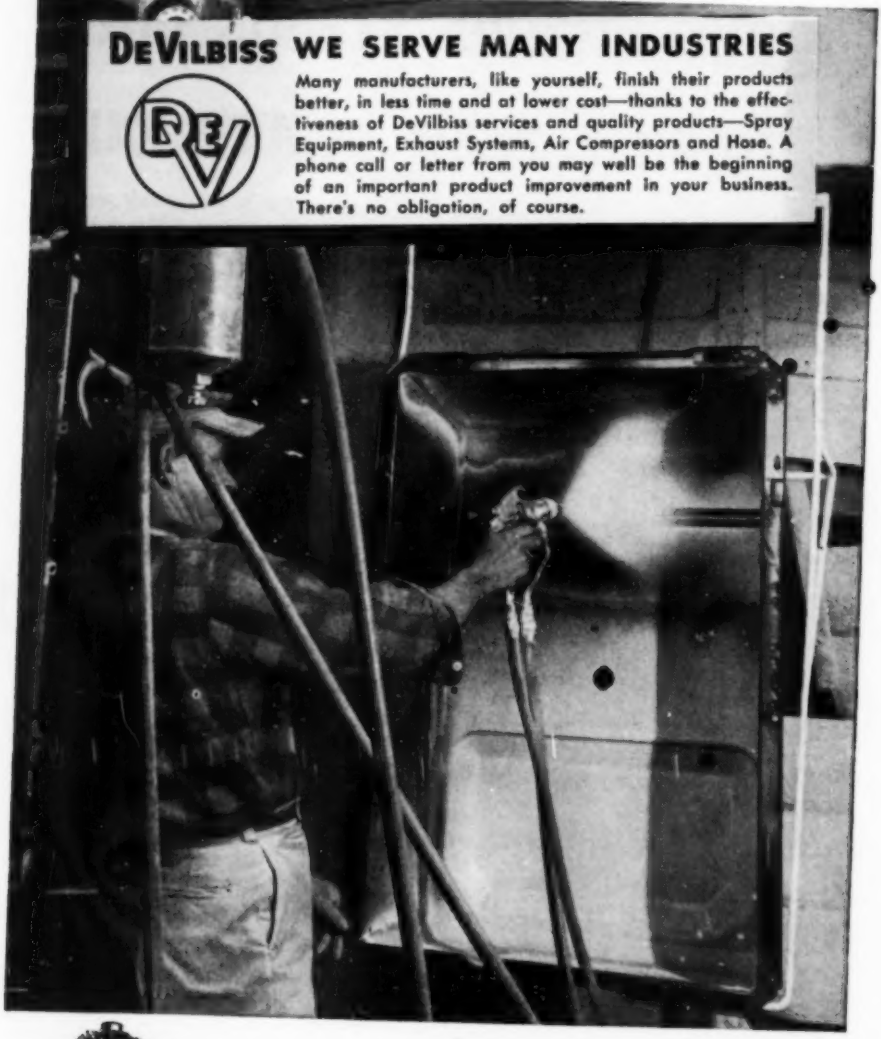

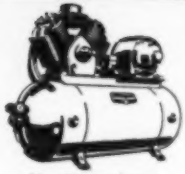

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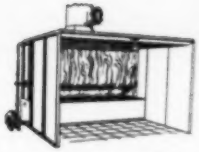

Spray Booths

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types of solvent-vapor degreasers are available and in service.

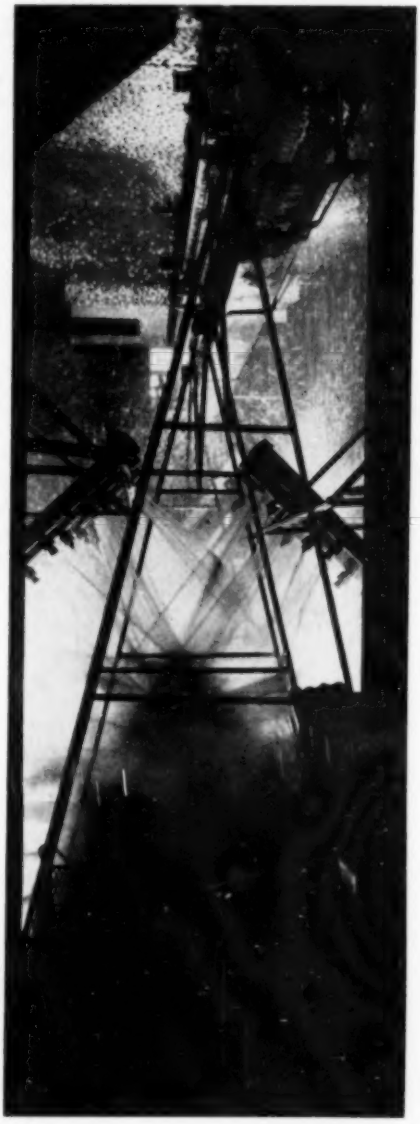
First, we have the immersion degreaser wherein the product is lowered into boiling solvent to remove heavy contamination, then into clean solvent to rinse and cool the metal, and finally into the vapor zone to complete the cleaning and heat up the metal so that its surface dries immediately as it leaves the vapor zone.

Vapor Slush . . . . and Vapor-Spray-Vapor

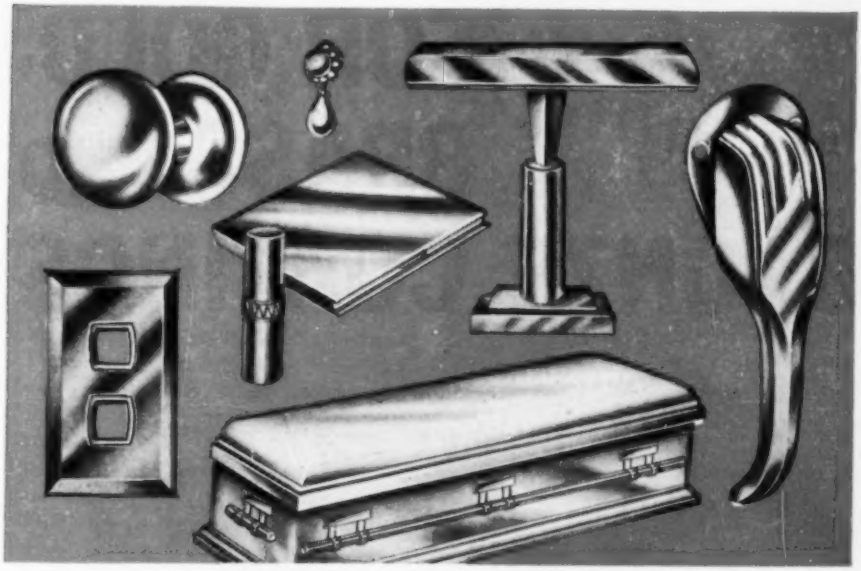
Second is the vapor-slush degreaser which is similar to an ordinary vapor degreaser except that it has a pump, hose and nozzle with which the operator sprays or flows solvent over the work to remove insoluble soils before the parts are completely cleaned in the vapor zone. Also, the flowing of cool solvent over thin gauge metal parts helps to keep them cool so that the vapor will more readily condense on their surfaces.

Third is the vapor-spray-vapor degreaser where the work is first wet with solvent vapors, then solvent is pressure sprayed over the parts, and finally the work enters a vapor zone for complete cleaning and drying of all metal surfaces. This type of degreaser is always conveyorized either by a continuous overhead chain, or by a self contained metal belt or cross bar conveyor.

It is possible to conveyorize all solvent vapor degreasers if the nature of the work and the volume of production makes this desirable. Solvents used are non-inflammable, which eliminates any fire hazard, and they may be used on both fer-



An example of pressure spray cleaning. For this pressure cleaning, one may use cleaning solution, solvents or hot water and steam.



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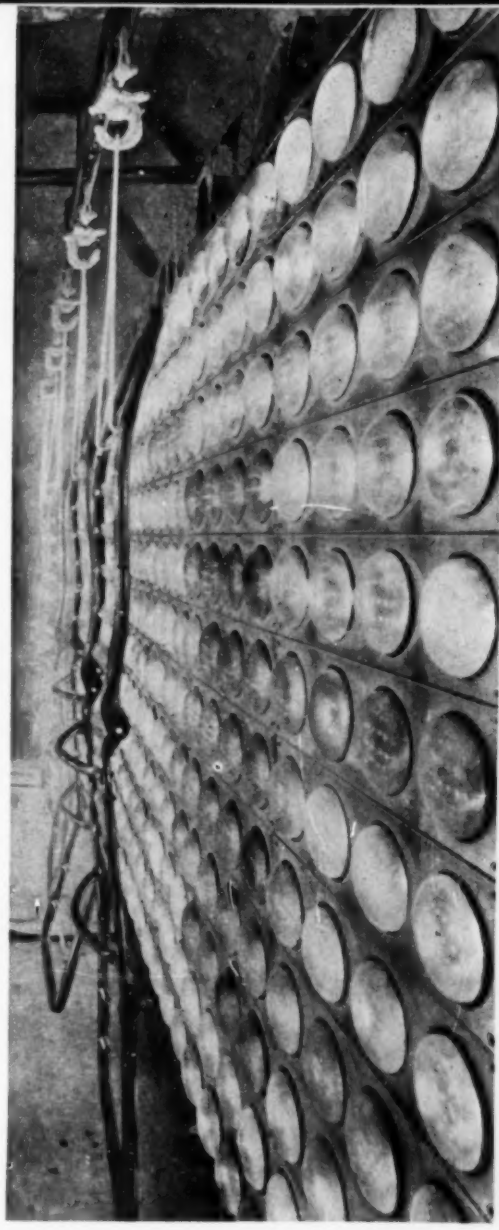
rous and non-ferrous metals without harm to the metal. The surface of vapor cleaned parts is sufficiently dry so that no follow-up drying is necessary.

Depending upon the quantity and type of soil to be removed, the cleaning of metal products in a vapor degreaser may result in a slight residue being left on the surface. This residue does not seem to have an adverse effect on the adhesion of paint or lacquer coatings that are applied later. However for certain products that must have a mirror like finish, it may be advisable to wipe off this residue before any finish coating is applied. Examples include costume jewelry, compacts and cigarette cases; these products are vapor degreased and then given a protective coat of clear lacquer or clear synthetic material. Vapor degreasers are engineered and built so that no appreciable vapor fumes escape.

Thermal Degreasing in Burn-off Ovens

Thermal cleaning is adapted to certain types of metal products. The burn-off process as it is generally called by shop men, is quite simple. It is accomplished by placing metal products in an oven where the temperature of the metal (not necessarily the oven temperature) is rapidly raised to as high as 650° to 700° F. for a few minutes. During this period (usually from two to five minutes by electric infra-red) the temperature of the metal is raised above the volatilization temperature of the surface oils and grease, consequently these soils are virtually vaporized. [*To p. 34*]



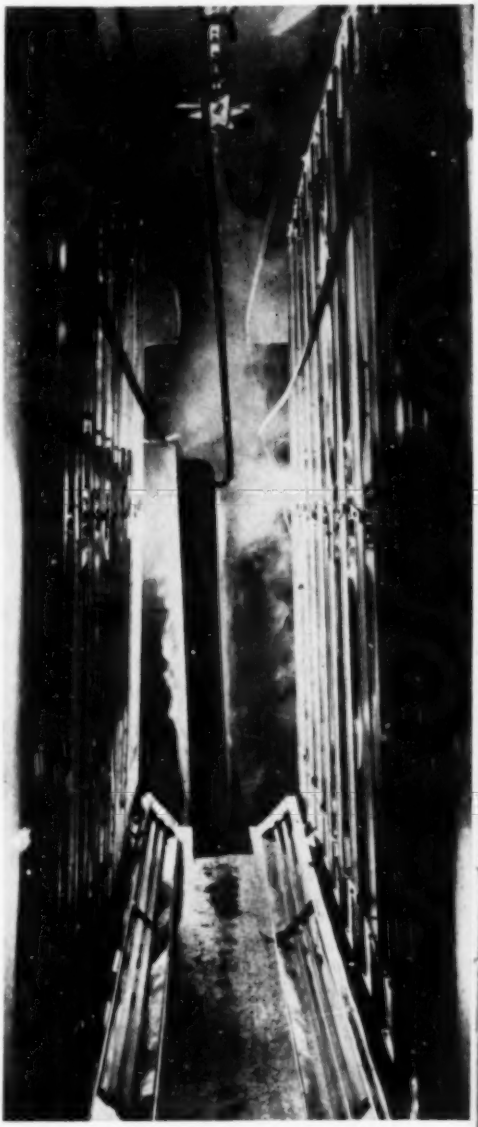
A peak inside a degreasing oven wherein metal chair frames are subjected to burn-off heat by infra-red lamps on both sides. Photograph, Fostoria Pressed Steel Corp.

The burn-off process is especially effective in volatilizing the oils in lapped joints, seams and recesses. When the surface oils and grease are sufficiently heavy, a slight carbon residue may result from the burn-off process but this slight residue does not seem to have any harmful effect on the adhesion of subsequent organic coatings. However, for an extremely high quality finish on certain very fine products, the surfaces could be carefully wiped with a tack rag before any coating material is applied.

During the burn-off process thin sheet iron and sheet steel surfaces may assume a blue color similar to that on a blue steel gun barrel. This oxidation, when it occurs, penetrates the metal slightly and provides a temporary rust-inhibiting surface, as well as a good base for the film of paint. By a "temporary rust-inhibiting surface" I mean that the product is not likely to rust in the usual period of time between cleaning and painting. The term should not be confused with the insoluble phosphate coating that is applied to metal products in a series of dip tanks or in a multi-stage washer. The phosphate coating offers a continuing inhibition to corrosion, even after the finish coating is applied.

Many of our sheet metal products are adaptable to cleaning by the burn-off method. Burn-off ovens may be heated by either gas or electricity.

Thin gauge sheet metal parts heat quickly and cool off quickly. An element to consider is the possibility of certain parts or products warping if the heat is not uniform-



Surface grease vaporizes before the intense heat made by infra-red heaters on each side. The pressed metal parts hang from long hooks attached to the overhead conveyor.

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83-12

ly applied to them, or if it is too high or if it is continued too long.

Some experimenting may have to be done to develop accurate information in reference to this feature, as it might affect certain products, although most experienced oven engineers are in position to offer dependable suggestions and advice on the subject.

Steam Cleaning for Some Special Jobs

For some metal products too large and heavy to be run through a metal washer or through a series of dip tanks, and where the contaminants on the surfaces are too heavy to permit convenient or economical hand washing or hand brushing, steam cleaning may be the answer. In this method of cleaning a hot detergent especially adapted to removing the particular soil from the surfaces, is applied to the work through a steam gun under pressure.

Cleaning is accomplished quickly and effectively by the physical action of hot steam under pressure. Heat softens any oil or grease that may be present, while the detergent provides the chemical action as a wetting agent and emulsifier. After cleaning, the soil is rinsed off the surface by closing the detergent solution valve on the gun and applying only steam or hot water. Nozzles that produce flat and round patterns are available.

Blast Cleaning—a Form of Dry Cleaning

Blast cleaning — formerly referred to as sand blasting, abrasive blasting, shot blasting, etc.—is a type of "dry cleaning" wherein one or more powerful sprays of dry abrasive or shot are directed against metal surfaces to be cleaned. The force used to drive dry abrasive through a hose and nozzle is generally compressed air, but in some blast cleaning machines the centrifugal force of a specially designed rotating wheel hurls the stream of abrasive with sufficient force to do the job satisfactorily.

The principle of blast cleaning is adaptable to a variety of work. A typical factory application is to remove rust, shop smudge marks or old paint from iron and steel castings. The castings are placed on a large revolving table or on a flat-bed conveyor which moves them through a blast cleaning cabinet. After one trip through the machine, the castings may need to be turned over to expose the under side to blast cleaning during a second trip through the cabinet.

In other applications men dressed like deep sea divers work in a blast cleaning room where they direct a pressure spray of dry abrasive through a hose and nozzle to the castings being cleaned. Compressed air carries the abrasive through the hose and propels it with great striking force against any surface toward which the nozzle is pointed.

In much smaller blast cleaning cabinets a single part to be cleaned is held in the operator's rubber-gloved hand and thrust through a flexible opening in the cabinet where it is moved and turned to different positions while a shower of abrasive beats against it from one or more directions.

Blast cleaning is also applicable to the cleaning of very large work,

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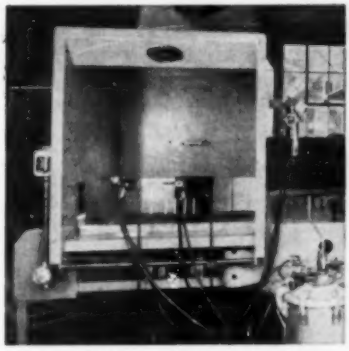
It will accommodate pieces of from less than 1-in. diam. to over 12-in. diam., which require a high quality finish, such as shell noses, cartridges, weapon parts, also clocks, pens, pencils, door knobs, etc. Positioned on work holders, pieces are automatically sprayed, travel on through a drying chamber for solvent evaporation, and then into electric strip-heated bake oven from which they emerge for a cooling period before being removed.



View of booth showing automatic spray guns — lower view shows conveyor arrangement and drying and baking compartments.

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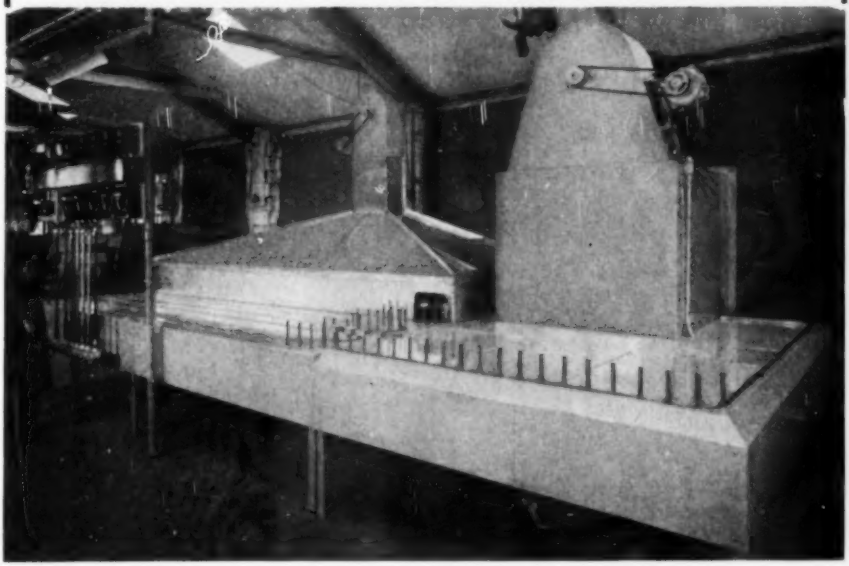
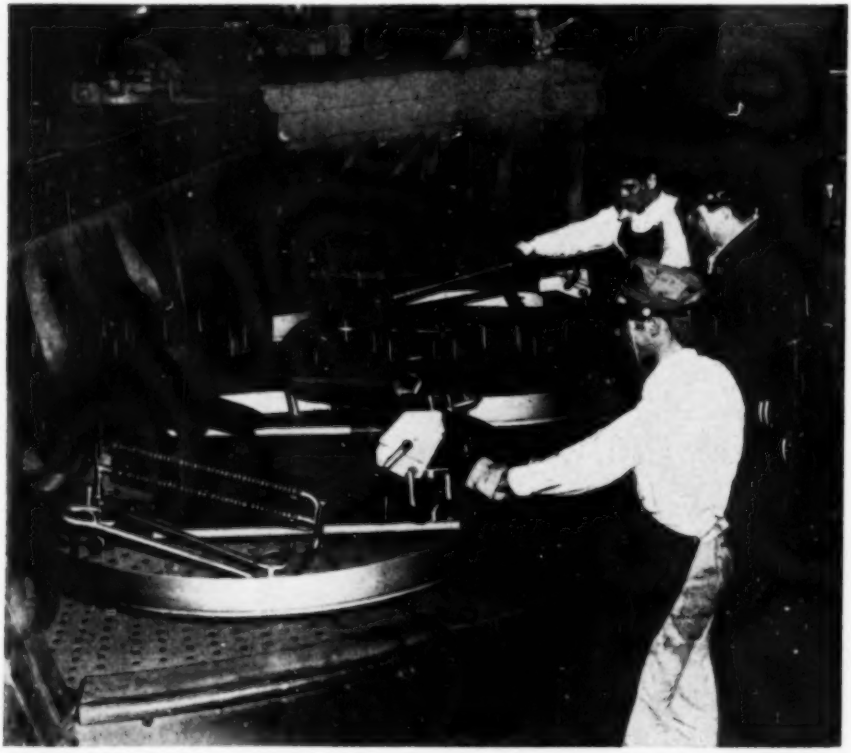


such as railroad cars, busses, trucks, etc. This work is generally performed in a large tightly closed room wherein elevator scaffolds extend parallel to the car or truck on both sides. Operators wearing inhalators and shields over all exposed parts of their bodies stand on the elevator scaffolds to direct the spray of abrasive or shot against metal surfaces of the car. The soil and rust or old paint are removed by the spray of abrasive or shot driven by compressed air. The resulting surface shows bright and clean, and it is lightly etched to form an excellent base for paint.

One source of information on this subject advises that the surfaces of "articles to be blasted should be free of oil, grease or water in order to avoid 'balling' of the abrasive."

With dry blast cleaning there is naturally no follow-up drying involved, as there is in wet cleaning. Of course, blast cleaning is not necessarily limited to dry blasts of



Three men are kept busy loading, positioning and unloading the metal parts on this exposed portion of the 14-ft. rotating table of an airless blast-cleaning machine at Servel, Inc.

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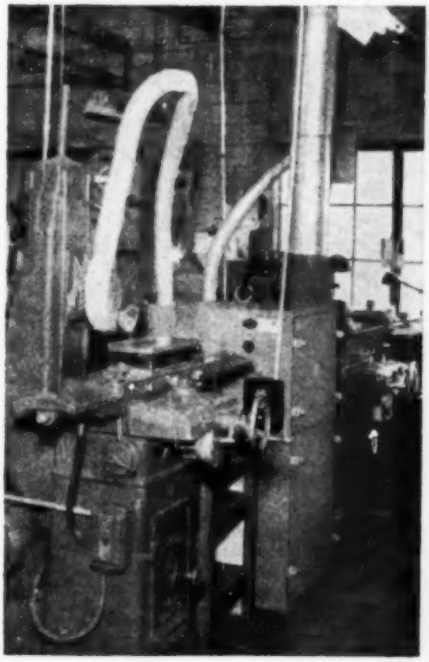
DUST COLLECTORS



Here a Torit No. 84 Dust Collector is meeting all the requirements of the customer, the workers, and a state commission, in trapping and cleaning dust laden air from two surface grinders. The only special adaptation necessary was to connect the exhaust vent to a pipe leading through the roof—a special condition in this state.

Compact and self-contained Torit Dust Collectors are exceptionally easy to fit into present and future production set ups. Installation and operating costs are low and efficiency is high. Today, well over 20,000 are in use throughout American industry.

If you have an industrial dust problem, write today for complete information and latest Torit catalog.

TORIT

Manufacturing Co.

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abrasive or shot; water or a chemical solution or steam may be included with the spray of abrasive or shot if desired, and this is done in some instances.

Choice of Cleaning Method Is Important

Now, with so many different methods, materials and equipment available, the question naturally follows: "Which shall be used to accomplish a definite purpose?" Several factors can influence one's choice of methods, materials or equipment to use for cleaning metal surfaces. Sometimes the initial investment is the deciding factor; sometimes it is the floor space available, or it may be some specification requirements, etc. A wise choice will take into consideration such specific reasons as the type, kind, shape and size of the product; the particular type of soil to be removed; potential volume of production, and whether or not the end use and life expectancy of the product demands a rust-inhibiting phosphatized base for its subsequent coating of paint, lacquer or enamel.

Call in an Engineer for Careful Consultation

Usually when any new installation or improvements in an existing installation are contemplated, the smartest thing to do is to call in an experienced and competent engineer from one or more well known responsible companies. Show him your products and all the facilities you have available, and explain what future changes may occur or what changes you might want to provide for. With a complete knowledge of all of the facts relating to your present and foreseeable future production setup, this technical engineer and his company will be in position to plan and furnish you a wise choice of perhaps two or three economical and efficient cleaning installations which will give trouble-free service. This choice of a product cleaning installation is too important, in every way that it affects your business and your products, to let your decision be over emphasized by a little knowledge or guess work or a hunch or some personal quirk, or by what your neighbor is using or plans to use.

Insist upon getting all of the facts as they relate to your products and facilities. Along with the performance and probable length of useful life of equipment, you will have to consider several costs—first cost, operating cost, maintenance cost, floor space cost, handling cost as a result of the installation, and insurance cost, etc.

Remember this: When you see a metal cleaning installation working so smoothly, efficiently and economically, there is more to it than meets the eye—past and present. In all probability the background of that installation includes some firm's and some engineer's years of experience, technical knowledge and pride of workmanship. Long after the first cost is forgotten the installation continues to function as planned and promised in the beginning.

For removing all traces of color buff from plated work or bright metal such as a cigarette case or a

28 Years of Experience In the Sale and Service of

CHEMICALS TO CLEAN and PREPARE METAL for PAINTING

Surphos CLEANER AND PRODUCER OF PHOSPHATE COATINGS.

Sol-Klean PHOSPHORIC ACID RUST MOVER AND ETCHER

Industro ALKALI CLEANERS, STRIPPERS AND AIR WASH COMPOUNDS.

Industrosolv SOLVENT EMULSIONS FOR SPRAY WASHING MACHINES.

SOL-KLEAN prepares steel and aluminum for painting, removing rust, oxide and oil. It etches the metal and gives a thin phosphate coating. One volume of Sol-Klean, diluted with 3 volumes of water, usually brushed on the metal at room temperature. It penetrates oil and dissolves rust. Sol-Klean is removed together with the dissolved oil and rust by wiping with rags or flushing with water. Metal may also be cleaned and treated by immersion in hot Sol-Klean and rinsing in water. Sol-Klean is non-inflammable and evolves no toxic or corrosive fumes.

SURPHOS cleans and produces a phosphate coating on sheet metal, machined and cast iron. It anchors the paint finish and increases its humidity and salt spray resistance. Use hot (one ounce per gallon solution) in Power Wetting Machine or dip tank. Acid proof equipment not needed.

NOTE:

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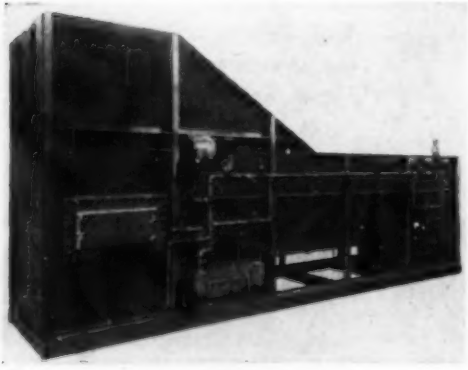
compact, a vapor degreaser is often the logical choice because it eliminates the water spotting and drying problems which exist when water solutions are used for metal cleaning.

Where production is continuously large and a rust-inhibiting phosphatized surface is required, as in automobile bodies, refrigerator cabinets, etc., a five or six stage metal washer is often found in service. For moderately small light gauge metal products, thermal (dry heat) cleaning is sometimes used.

Now as to soils, some drawing compounds congeal on contact with hot alkali solutions, therefore this type of oil or grease may have to be removed by a vapor degreaser. Drawing compounds that are high in a soap content which is insoluble in a vapor degreaser, must be cleaned in an alkali solution. Where rust is present and where only light soil has to be removed from metal products of moderate size, a phosphoric acid and solvent cleaner would probably be used.

A vapor-spray-vapor degreaser. Monorail conveyor carries the parts down through solvent vapors and through pressure sprays of solvent. After turning around a wheel, the parts are carried up through the solvent vapors to leave the machine at the same level as they entered. Photograph, courtesy of Detrex Corporation.



Surface Preparation of Ferrous Metals

Too much emphasis cannot be placed on the importance of proper metal cleaning and preparation of the metal surface for paint, lacquer and synthetic material coatings. Certainly all metal surfaces should be thoroughly cleaned before any coating is applied. Some products require only cleaning, after which the finish can be applied. Others require a cleaning and etching of the surface to increase adhesion of the finish coating.

On products that must have definite protection against corrosion, as well as lasting adhesion of the paint film, the surface is usually given a phosphate coating. This coating prevents electro-chemical corrosion of the metal so that moisture cannot cause rust to form under the paint film, and it prevents the spread of rust in case the finished product is deeply scratched or marred. The extent to which rustproofing needs to be carried will depend upon specification requirements based on the end use and life expectancy of the finished product.

Phosphate Coatings by Dipping or Spraying

Phosphate coatings may be applied by either of two different methods. One is to dip the cleaned product (while the surface is still wet) into a tank of hot phosphate

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The YOUNG & BERTKE Co.

OVENS • SPRAY BOOTHS • DUST and FUME CONTROL

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solution for from two to five minutes. The other is to spray the hot phosphate solution onto the parts or products as they go by conveyor through a power spray washer. The spray method usually requires from one to three minutes. It is sometimes used in a single stage, but usually in a three to five stage washer.

In the one stage washer, solutions are available which contain acid phosphates and a cleaner for certain light soils. This solution is sprayed on the product for 60 seconds, followed by a short period in a dry-off oven. This treatment produces a phosphate coating of 40-mg. to perhaps as high as 150-mg. or more, according to statements or claims of various suppliers of the compounds.

In five and six stage washers the usual procedure is as follows:

1) Alkali or phosphoric acid cleaner suitable to remove the soil (160°-180° F.).

2) Hot water rinse (140°-160°).

3) Phosphate coating solution (130°-150° F.).

4) Cold water rinse (seasonal temperature).

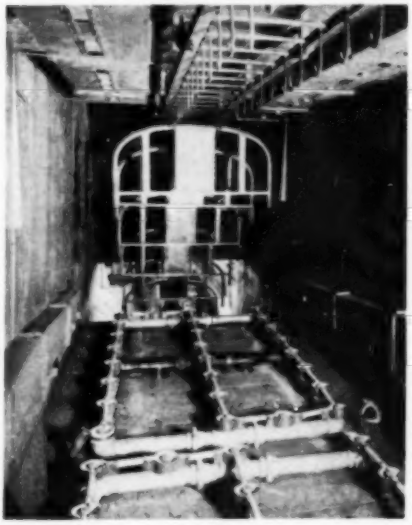
5) Chromic acid (160°-180° F.).

6) Dry-off oven (200°-300° F.).

This method of application, as well as the tank immersion method, will result in a phosphate coating of from 100 to 400-mg. per sq. ft. of surface.

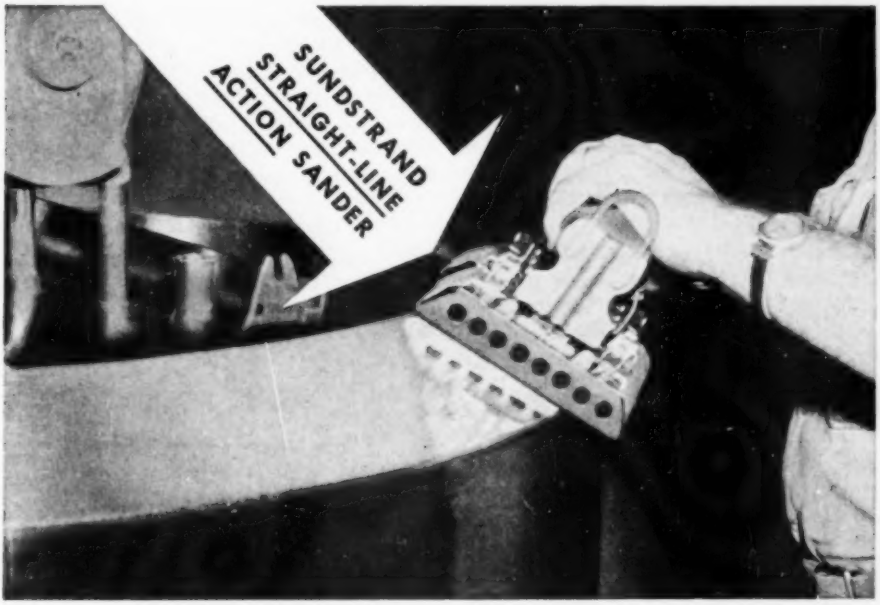
Surface Preparation of Non-Ferrous Metals

Surface preparation of non-ferrous metals (those other than iron and steel) before the application of paint or enamel is essentially the same as for ferrous metals insofar as methods are concerned. Reasons for surface preparation are also identical with those of ferrous metals, namely to inhibit corrosion and to increase adhesion of the paint film to the metal. In the case of zinc and its alloys, proper cleaning and surface treatment provides a means of counteracting the reaction of the metal with most organic coatings.



Interior of an infra-red gas burn-off oven. Overhead bar-type conveyor carries metal beds through this oven where radiant heat raises metal temperature to 650° F., which cleans and oxidizes the metal surfaces. Photograph, courtesy Burdett Mfg. Co.

After cleaning the surfaces of parts made of zinc it is possible to apply a mild acid to etch the surfaces and thereby promote initial adhesion of the paint film. However, this treatment does not stop reaction between the metal and the finishing material. This may only



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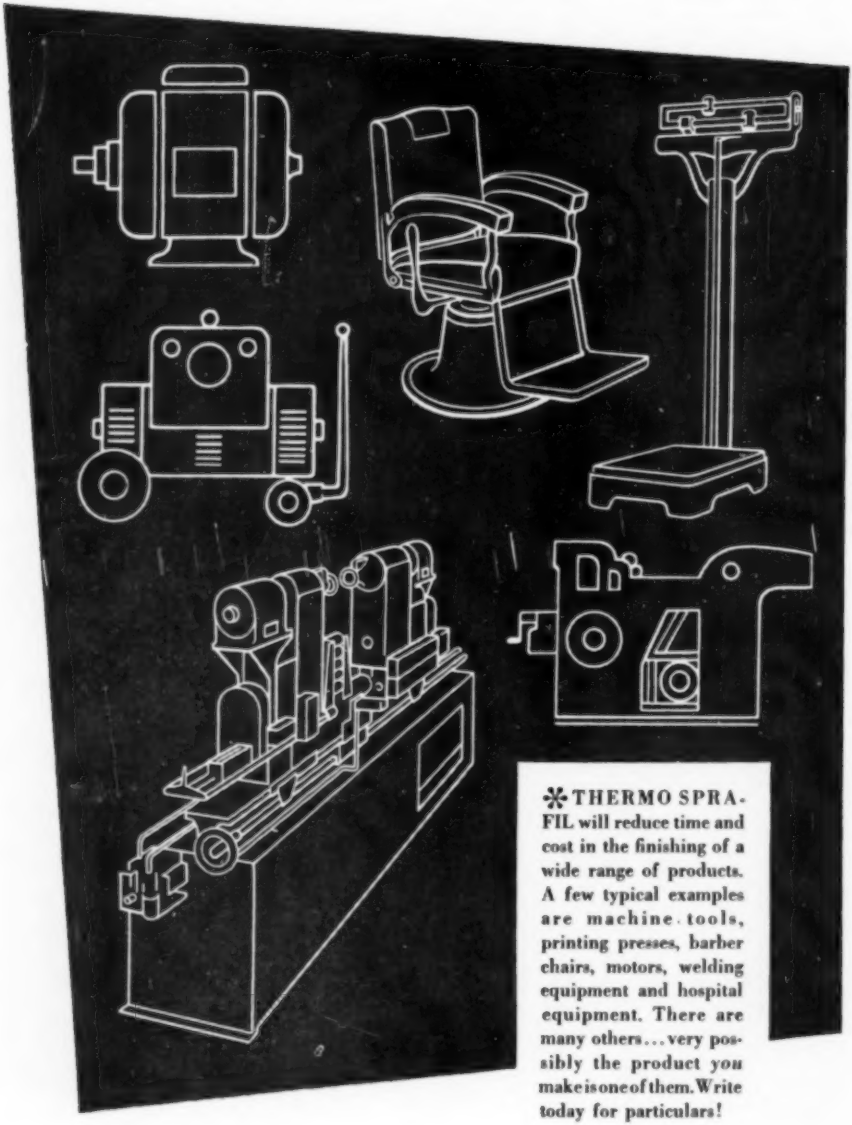

✻THERMO SPRA-FIL will reduce time and cost in the finishing of a wide range of products. A few typical examples are machine tools, printing presses, barber chairs, motors, welding equipment and hospital equipment. There are many others... very possibly the product *you* make is one of them. Write today for particulars!

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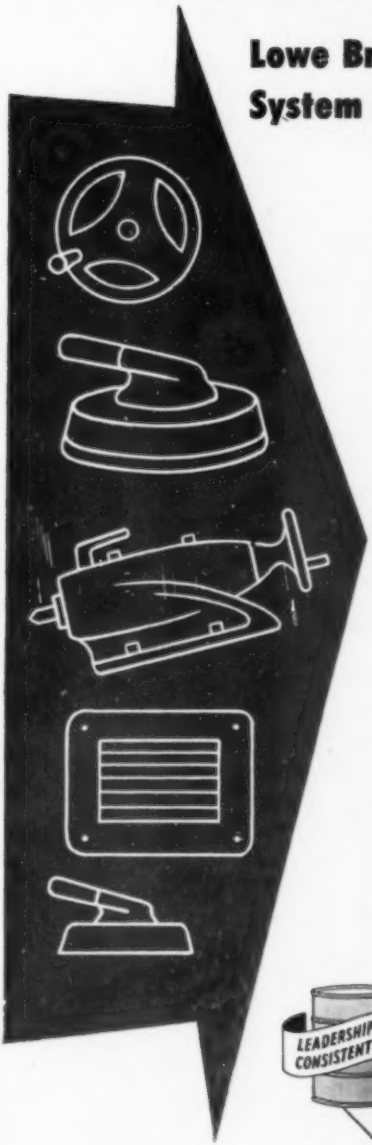

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- Flows out smoothly!
- Fast drying—can be sanded or re-coated in a few hours!
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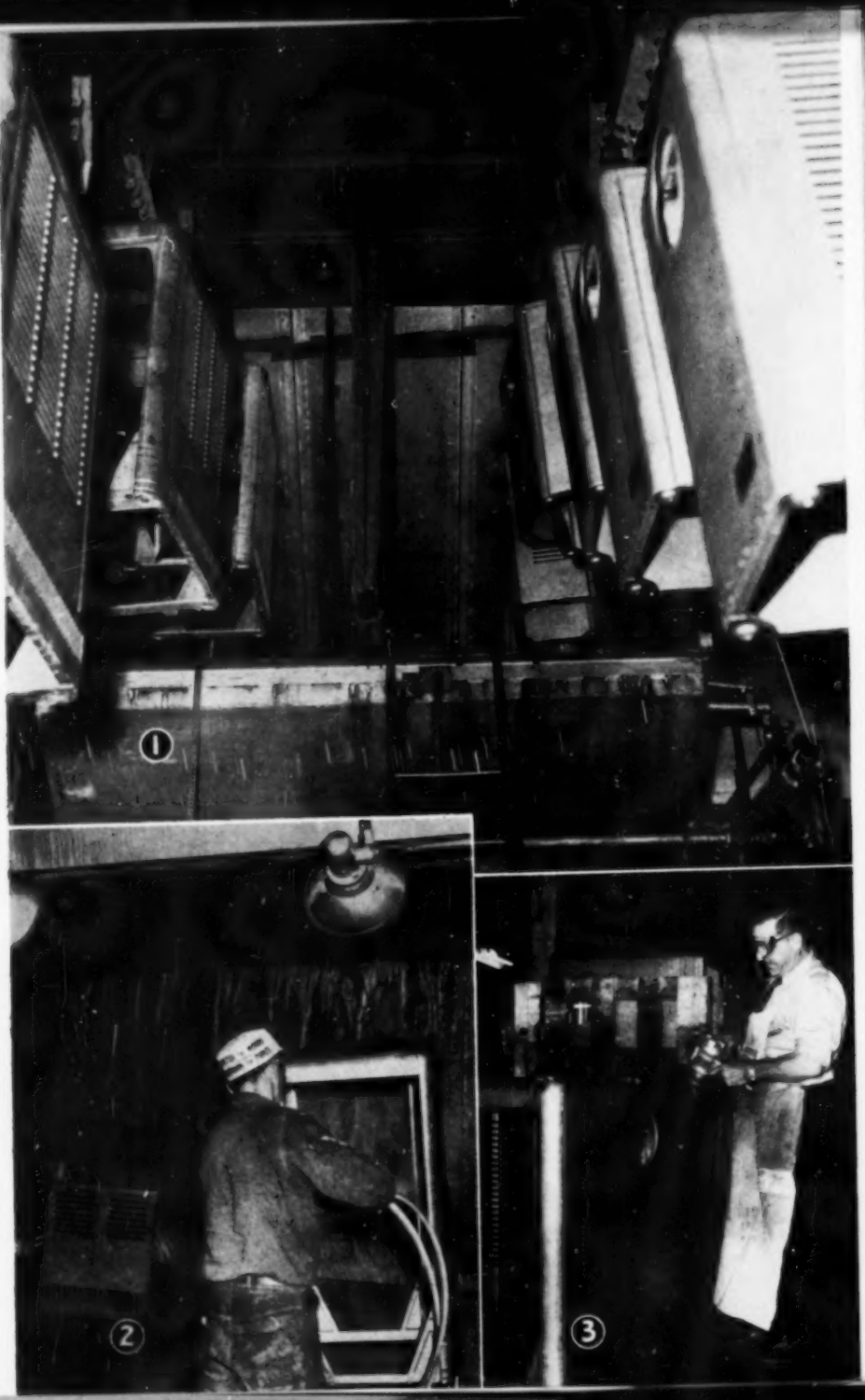
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Finishing
SPACE HEATER CABINETS

Cutting down the weld metal on joints of cabinets; smoothing surfaces; cleaning and drying; spraying hammered-effect heat resistant enamel; oven baking and the final complete assembly.

BY WALTER RUDOLPH

PERFECTION STOVE CO., Cleveland, Ohio, working closely with a major paint supplier and using plant facilities advantageously, has developed an efficient setup for finishing its several models of domestic space heaters. The finishing technique has also helped solve design problems, save metal in fabrication, compensated for defects in metal surfaces (hinging upon current metal supply problems) and reduced to a minimum the possibility of eventual heat discoloration on its heaters.

Space heaters of upwards of 70,800-B.t.u. output per hour are painted an "attractive silver-spray brown, baked enamel finish." In size, these heaters range from 41x32½x25½-in. down through the smaller sizes. Sheet metal of around 20-guage thickness is used in fabrication. After the press work, there follows spot welding of front, back and side panels for the cabinet structure. Door panels, shutters and other parts complete the unit.

Key to illustrations on opposite page.

1) Looking upward at entrance and exit (right to left) of the degreasing tunnel, an 8-minute cycle.

2) Spray painting the interior of a heater cabinet.

3) After welding and before cleaning, power disc sanding grinds down the rough projecting weld metal.

Perhaps we should note an interesting work-and-time saving feature of this fabrication setup. Perfection has developed a mobile welding jig for the assembly of space heater cabinets; the work moves around a circular floor track, from one welding station to another. Each worker needs to use only one type of welding tip for certain welds; the jig has a quick-clamping device and other handy features.

Smoothing Metal Surfaces; Cleaning and Drying

Welded cabinets are carefully inspected and routed to a nearby metal finishing area where all weld roughness is cut down and surfaces are smoothed with a portable disc sander fitted with No. 120 grit paper. Regular dinging hammers and blocks are used to pound out

any dents that the metal may have received during fabrication.

Hand trucks are employed to move the metal cabinets to the finishing room where they are hung to an overhead chain conveyor. They are not removed from the conveyor until they are ready for final assembly, completely painted. Every cabinet is carefully inspected just before it enters the cleaning and drying tunnel.

Metal cleaning equipment includes both vapor and slushing cleaning steps in an 8-minute cycle from entrance to exit openings, the conveyor doubling back upon itself. Upon leaving the tunnel the metal cabinets and other parts travel 30-ft. or so to the double 12-ft. water-wash spray booths.

Incidentally, at this point, I would like to call attention to a conveyor maintenance "kink" in the Perfection finishing setup. It is an air-powered mechanism mounted just above the conveyor line and it automatically sprays a small quantity of graphite-base lubricant on moving parts of the conveyor. This automatic lubrication compensates for the dryness of the conveyor line caused by repeated trips through the cleaning and baking stages of the finishing setup.

Hammered-Effect Finish is Heat Resistant and Durable

The baked coating used on these space heaters is a hammered-effect finish—quite attractive and very durable. The interiors of small space heater cabinets receive a mist-coat; the outsides are given a heavy coat of hammer pattern finish. Larger cabinets receive an aluminum bronze interior coating, and then an exterior coat of the same specially developed enamel mentioned above. This is commonly known as a hammer finish, with silver-like specks showing throughout the overall rich brown color.

The aluminum-bronze interior finish for the larger cabinets was developed to keep down surface temperature as much as possible and thereby reduce the possibility of finish discoloration. As is known throughout the industry, it is difficult to produce an attractive dur-

Notice automatic lubricating equipment for the conveyor chain, as shown below.

Underwood & Underwood

United's olive green beats every test . . .

Government or civilian

Now, with United's Olive Green you get a tough, mar-resistant, durable finish that surpasses every standard set by the government for the products it purchases, from filing cabinets to tanks.

Olive Green is but one of a complete range of colors and bases, available in formulations that meet and exceed the most stringent requirements of military and civilian products. It is a finish that means greater acceptance and the reduction of possible rejects.

Why not describe YOUR requirements and let us send a generous sample of a finish that will exceed them . . . that will show you the way to keep your product one step ahead. Write today.

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able finish that is at the same time heat-resistant. Perfection has found a highly successful finish for its requirements.

It is estimated that large space heaters, with their greater B.t.u. output, naturally develop temperatures ranging up to and around 500° F. This must be taken into consideration when planning the paint job on such products. Again, by the method developed at Perfection — reducing surface temperatures on large heaters—it has been possible to improve cabinet design and eliminate some parts, such as metal shields or baffles which are generally used in other heaters.

Perfection has found it important to maintain a uniform viscosity of paint which is sprayed on cabinets and their parts, such as door panels and shutters. The viscosity of the material must be carefully controlled so that all pieces receive the same coating. Paint storage tanks that supply spray guns are positioned in a special water bath the temperature of which is maintained at 78° F., or as nearly to that heat as is possible throughout all painting operations.

The cabinets and their parts are kept in job lots, so that in the final assembly, a cabinet painted one day will not be fitted with a door panel or shutter that was painted a week previously or a week later. This precaution removes the possibility of a customer complaint about two

Spraying hammer-effect finish from containers heated by hot water in tank, see lower right.

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For over a Half Century our representatives have shown that Quality finishes can produce lower finishing cost, by greater coverage.

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shades of paint, however faintly the difference may be, after a period of service in the home.

Cabinets pass a short distance from the spray booths to the gas-fired (with standby oil heating equipment) baking furnace for 35 to 40 minutes of curing time at about 440° F. The entire conveyor line, from cleaning through to final inspection and take-off for movement to assembly, travels at a steady rate of about 5-ft a minute.

This is but one of the many finishing operations at the vast Perfection Stove plants in Cleveland. We note, in passing that an effective transfer rail arrangement has been developed for moving racks of small parts at right angles from a track paralleling a work area to a track that enters a drying oven.

Ransburg Elec.-Coating Display Stopped 'Em at Metal Show

At the National Metals Exposition in Detroit, Mich., during the week of October 15-19, the Ransburg Electro-Coating Corp. had a demonstration exhibit which attracted everyone's attention and interest. It consisted of a short conveyor line setup for electro-coating washing machines with white enamel, as is done in regular production by the Ransburg No. 2 Process.

Every ten minutes a demonstration was given of painting two washing machines. No provision was made in the setup for exhausting overspray because, as the company stated, "there wasn't any to bother about". A fan in the top of the hood removed solvent vapor escaping from the wet paint.

The floor was waxed asphalt tile; and at the end of a day of demonstration, only a very light film of dry white paint, in a small spot on the floor, indicated what little had escaped deposition on the washers. Coating efficiency was over 99%, according to the company's statement.

According to those in charge of the demonstration visitors couldn't believe what they were seeing. For the first time they were seeing spray painting without a spray booth, without compressed air for atomization of paint, without overspray being exhausted, without loss of paint.

Demonstration setup showing Ransburg No. 2 electro-coating process applying white enamel to washing machines as they move, by overhead conveyor, past new electrostatic spray heads.

Not One Has Disagreed!

Every Burdett "Radiant Heat" Oven user confirms the often repeated claims of 30% to 70% saving in heat processing costs

IN PAINT DRYING

"Former 60 minute bake, now done in 20 minutes."

"A very fine bake in one-half the time of conventional methods—practically no maintenance."

IN BURN-OFF

"Cleaning and burning operations in same equipment at one-half the cost"

CORE DRYING

"Core drying formerly required 12 hours now done in 12 minutes, to much greater depth"

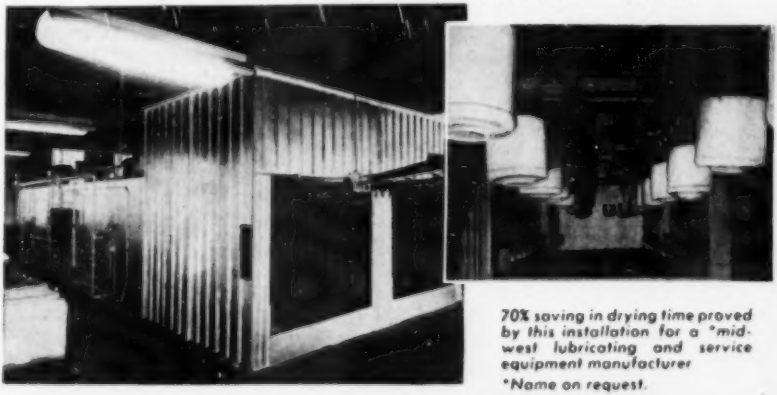
AND SO ON IN . . .

- Paint—Enamel—Lacquer drying
- Flash coat drying
- Burn-off—de-greasing
- Core baking
- Soft metal melting

WHY DELAY ENJOYING THESE SAVINGS IN YOUR PLANT?

Let us prove the many advantages of Burdett Ovens without one cent of cost to you! We have equipment here at our plant that will test run your product with your own paint and under your general conditions—Results will tell you what your savings will be before you invest!

ACT NOW—SAVE!



*70% saving in drying time proved by this installation for a *mid-west lubricating and service equipment manufacturer*

**Name on request.*

BURDETT

MANUFACTURING COMPANY

OVENS AND "RADIANT HEAT" GAS BURNERS

Industrial Finishing
1142 N. Meridian St.
Indianapolis 4, Ind.

Gentlemen:

We have been reading various articles in the last few issues of this magazine regarding hot lacquer applications, roller coating methods, etc.

We manufacture toy trunks and skate cases on which we primarily use a 32-34 gauge black plate metal over a wood frame. Our present finishing method is to spray a quick air-dry lacquer that hardens in about 30 minutes. We spray this lacquer without any cleaning of the metal.

We have always wondered if this sprayed lacquer finish is better than a sprayed enamel finish. Our setup requires a quick air-drying, as we have no oven heat for an enamel. Now we contemplate a change in our present setup and would appreciate it if you can give us any information as to the questions we have in mind.

We are interested in finding out which method is better, that is the one we are now using, or if we should use enamel, roller coating the black plate metal and drying with perhaps an infra-red oven? Which method is cheaper, and which would give us the better finish?

Another thing we haveto do with the metal is to bend it, with an ordinary bend at right angles 3/8-in. from the edge. We bend the metal before we spray our lacquer. If we roller coat and bake the enamel, would the enamel coating material take this right-angle bend without chipping or breaking?

If you can give us this information, or refer us to some company that is familiar with these two methods, we would appreciate it very much.

Yours very truly,

Lacquer or Baked Enamel

FOR PRESSED METAL PARTS

THE QUESTION as to whether lacquer is a better finish than enamel, or vice versa, is one that cannot be answered categorically and anyone who attempted to do so would be risking a shower of criticism, no matter which side of the question he took. Actually the matter is not that simple. There are pros and cons on each side. One can make an intelligent choice only by carefully gathering the pertinent facts covering each situation and weighing them against each other.

Lacquer is a good finish. After all, some of the highest priced automobiles on our highways today are finished in lacquer. What better testimonial would you want? Furthermore, some of our finest pieces of furniture are finished in lacquer.

Provided a good lacquer is being used, it would seem that the physical properties inherent in a lacquer finish would be entirely adequate for the end use described in the letter on the opposite page.

Lacquers are relatively low in solids compared to enamels, and they require more expensive solvents in application. Both of these facts add up to the conclusion that lacquers are not cheap. However, they are very easy to apply, they dry rapidly without heat and they yield tough durable films, permitting the finished articles to be handled and shipped in the shortest possible time.

Features of Lacquers as Finish for Thin Metal

If the build, gloss and general appearance of the lacquer finish is satisfactory then the user must decide whether or not the savings in capital investment for ovens and conveyor equipment, the value of the floor space saved by using a quick air-drying finish, the speed with which articles can be packed and shipped after finishing and other more or less abstract advantages that are difficult to tag with a dollar sign, are worth the higher cost per pound of solids deposited over a period of years.

When considering hot lacquers, one must remember that the original gallon cost is higher, the solvents required are more costly and the overspray going up the flue is higher in solids as well as that portion of the lacquer actually hitting the work; therefore, the saving in material cost will be modest*. There may be a more substantial saving in labor. However, in this writer's opinion, the case for hot

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Editor's Note: This article, written at the Editor's request as a reply to the letter reproduced on the opposite page, is from an authority on finishing materials, but inasmuch as it touches on points that are more or less controversial and especially because of the strict policy of the company with which he is connected, the author prefers to remain anonymous.

*See footnote at bottom of next page.

lacquer is in the superior quality of the deposited film. The appearance of hot lacquer films is generally preferable to those applied cold. To date the most promising field for hot lacquer applications seems to be wood finishing.

Enamels; Slow Air Dry; Oven Dry; Roller Coat

The case for enamels is in higher solids which usually results in more gloss and film build per coat. These solids are lower in cost than lacquer solids, and lower cost thinners can be used in applying them. Without drying ovens there is a dirt collection problem and at least an overnight dry before finished articles can be packed and shipped. With drying ovens, high speed finishing schedules can be achieved, frequently as low as five or ten minutes, depending upon the type of enamel used, the degree of heat available in the oven, the metal mass involved, etc. Here, of course, we have the initial capital investment to worry about.

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*An authority on the use of finishing materials that are heated and applied (by spray, flow coating, roller coating or dipping) at elevated temperatures, declares that with hot spraying there is less overspray because the lacquer or enamel thinned by heat can be sprayed satisfactorily with about one-third of the air pressure generally used to spray unheated materials, therefore a greater percentage of the material stays on the surface being coated and a smaller percentage of material is blown away as waste into the air and exhaust system.

A smaller quantity of solvents is needed per gallon of material because heat is largely relied upon to thin the lacquer or enamel to its proper working viscosity.

Incidentally too, more synthetic enamels are sprayed hot than nitrocellulose lacquers, and most of these enamels are being used to paint products made of metal. More and more installations are being placed in service for spraying materials at elevated temperatures.—Editor.

The case for roller coating is very strong because here there is practically no loss of finishing material, and what loss does occur is primarily due to spillage and clean-up after the day's operations. Uniform thickness films can be deposited, which means uniform hardness, durability and appearance, as well as savings in material.

In the roller coating technique lacquers are ruled out from the standpoint of economics. In order to keep the finishing material from drying up on the rolls, and to insure good flow and smoothness on the coated sheet, very slow solvents must be used. High boiling lacquer solvents are very expensive which has just about priced lacquers out of this field. High boiling enamel solvents, on the other hand, are relatively cheap and readily available.

Special Enamel Coatings Will Take Much Fabricating Abuse

It is really amazing how much fabricating abuse a properly formulated enamel will take. Many of our automobile dash-boards and instrument panels are coated and grained in the flat sheet and then fabricated. Fabricating in this case involves stamping the metal into the various compound curves, cutting edges, punching holes to receive radio panel, clock and speedometer dials, etc.

All lithographed containers and closures are coated in the flat sheet and subsequently fabricated. In this case metal is rolled over on itself and crimped to form can ends and side seams. Screw caps are stamped out, frequently requir-

know your
EPONS
(EPOXY RESINS)
EPON (EPOXY RESINS) are made with epichlorohydrin and bisphenol. These resins are relatively new and exhibit outstanding adhesion, good elasticity, and good resistance to most acids, solvents and alkalis. They are converting type resins and must be cured at high temperatures to attain the utmost chemical resistance. Modifications of these resins have shown excellent fabrication, adhesion and hardness when compounded in coatings for the Metal Finisher.
Rx
Watson-Standard
Epon Coatings
FOR THE
Metal Finisher

THE alertness of the Watson-Standard technical staff enables us to bring to you Product Finishes which incorporate the latest developments. Our laboratories are continuously striving to improve the present line and to create new products for the metal decorating industry. We are progressive enough to know that no product is perfect. Constant vigilance is needed for improvement.

We invite you to avail yourselves of the facilities of our laboratory know-how.

• *Write for your copy of article "Vinyl Coatings for the Metal Decorator."*

Watson-Standard
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INDUSTRIAL FINISHES • PAINTS • PLASTICS • CHEMICALS

ing considerable drawing of the metal followed by threading and knurling of the caps; and, in the case of certain food cans, the coating, after taking this mechanical punishment, must still stand the rigors of steam sterilization and hot food processing techniques.

It should be emphasized that not any old enamel will turn in this sort of performance. Roller coating enamels that will stand severe fabricating are highly specialized products requiring a very specific type of "know-how". Only a few of the many hundred paint companies in the U. S. specialize in this type of coating.

Send Samples to Finish Manufacturer for Tests

If there is a question about the ability of the enameled steel to withstand the fabrication involved in subsequent processing, a few sheets of the steel should be sent to a finish manufacturer skilled in the art of metal decorating (Lithography). He will be glad to coat the sheets, using approved methods and materials, and return them for fabricating tests. It should also be borne in mind that the stamping dies must be in good shape and must be kept that way.

Having established the technical practicality of this method of finishing, the economics will speak for themselves.

P. S. A follow-up letter from the company whose inquiry prompted the foregoing article, reads as follows:

"With reference to your letter of October 8, we wish to thank you for your cooperation in advising us in regard to our metal finishing problems. With the information you have sent us, and what we have had from —— ——, we believe that we have the solution to our problem and will be able to do something definite about it. Your cooperation has been very much appreciated."

Turco Products, Inc. Appoints Midwest Managers

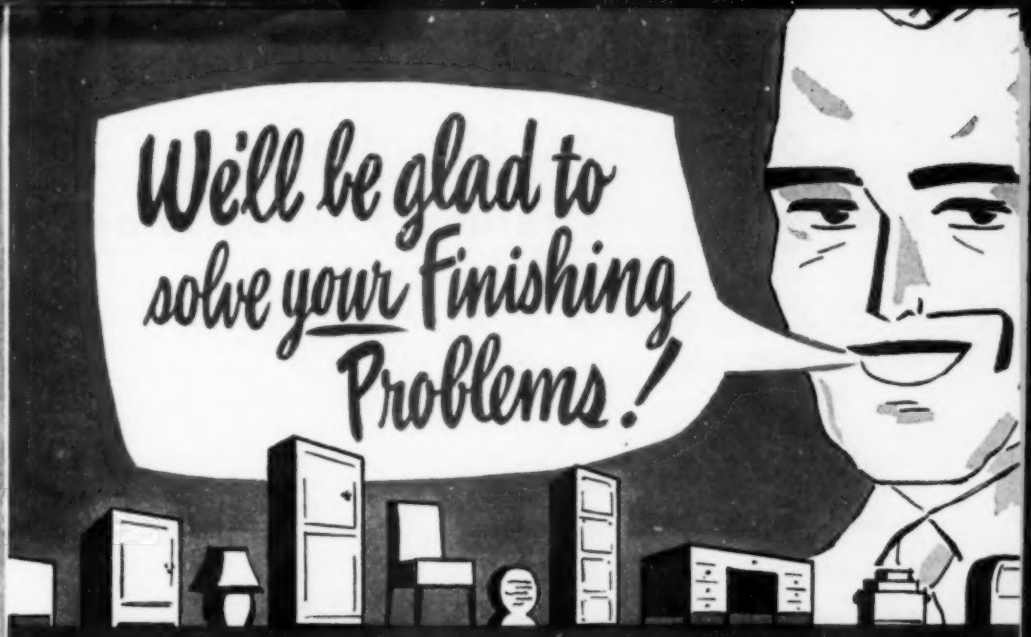
Appointment of Archie K. Beard as Midwest Sales Manager of Turco Products, Inc., was announced recently. Harold P. Glavin has been named to the post of General Manager, Midwest Division Factory of Turco Products, with headquarters in Rockdale, Ill.

Archie K. Beard and Harold P. Glavin

The newly-acquired modern Rockdale factory, completely equipped with new facilities is producing both powder and liquid industrial chemical compounds for Turco's midwest sales area. The large plant was acquired because of the tremendous growth of sales and the corresponding need for increased production facilities in the Midwestern area.

Mr. Beard, formerly Turco's District Manager in Cleveland, has been transferred to Chicago, where the organization's Chicago-Cleveland operation is now consolidated. He is in charge of sales for the Midwest area. Beard joined Turco as a Technical Service Engineer in September 1945, and assumed the Cleveland District Managership in January, 1948.

Mr. Glavin, for the past year Office Manager of Turco's Los Angeles Business Office, will coordinate factory and office operations in the Midwest Division. He joined the Accounts Payable Department of Turco Products in January, 1947, and since that time has worked his way up through the organization's ranks.



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CLINCO

Highest Quality

GOVERNMENT CONTRACTS

Clinton facilities and experience meet rigid government specifications. Your inquiries on Defense Contract work are welcome and will receive prompt, efficient attention. And all important — you will be assured of no compromises with quality workmanship and materials

THE CLINTON COMPANY

1210 ELSTON AVE., CHICAGO 22, ILL.

Convention Highlights of

SCREEN PROCESS PRINTING ASSOCIATION

By J. I. Biegeleisen

Co-Author "The Silk Screen Printing Process"

Variety of work exhibited; technical clinics held; presses, mechanical squeegee pushers and driers shown. Also paints that dry faster; special paints for all different surfaces, luminous paints; bright daylight colors.

SILK SCREEN printers from all over the United States and abroad made their annual pilgrimage to attend their industry's convention in Philadelphia, Penna., on October 21, 22, 23 and 24. This was the third annual conclave since the process industry organized itself as the Screen Process Printing Association, International.

Exhibition Featured a Variety of Work

Here we saw the largest single showing of process work ever assembled under one roof. The exhibit represented the best efforts of outstanding shops throughout the

Automatic screen printing press in operation. Photo from General Research & Supply Co.

world. It consisted not only of the usual advertising and point-of-sale display matter but also a variety of other work which is now silk screened. Included were ceramics, tiles and glass; silk screen printed metals; also cloth and wood; instrument dials printed with luminous paints; silk screen decorated vinyls, and opaque as well as transparent plastics; identification and decorative decals; flocked materials, etc.

The exhibition pointed up several things—first that process work is now known and practiced wherever printing is done. The membership list of the S.P.P.A. (Screen Process Printing Association) now includes silk screen shops in Denmark, New Zealand, Cuba, England, Sweden, Spain, Puerto Rico, Italy, Indonesia, Germany, Chile, Finland, Malaya, India and the Philippines.

The exhibit also showed that there are steady strides in technical perfection in processes and materials. Also that, as time goes on, with a wider knowledge of the process and improvement in techniques and materials, more and more uses are being found for this versatile printing process.

Technical Clinics and Forums for Visitors

Forum meetings were arranged separately for manufacturers, distributors, decal printers, processors of 24-sheet posters, metal processors, textile printers, producers of point-of-sale displays, plastic manufacturers and ceramic processors. The forums provided people in the same field, and with one common interest, the opportunity to discuss business and technical problems.

Meetings were arranged to cover broader areas of interest. Such a meeting was conducted by William Reinke of the Oil Color Litho Co. Mr. Reinke delivered a carefully prepared dissertation on "Cost Analysis". "Sales and Management" was the subject of nother meeting presided over by Eugene Heiffee, Vice President of the G. M. Basford Co. Mr. John Key of the Admiral Screenprint Corp. conducted a meeting on "Selling Price Analysis".

A Research Department, which had been active during the year, presented its report on new developments in screen process printing. This report, given by Victor Strauss of New York, also included a suggested research program for 1952.

Over 50 exhibitors demonstrated their products and processes. In the main there were four categories —paints, presses and driers, film making methods, related supplies.

Faster Painting Calls for Faster Drying Paints

Manufacturers of paints and inks have, for the past few years, worked dilligently to present the trade with paints and inks that would dry fast enough to keep up with accelerated production. It has long been realized that silk screen presses can be developed to step up production from 250 prints an hour to 2000 or more prints per hour. The drawback had been the fact that the type of paint or ink suitable for silk screen work generally dried much slower than inks used in letterpress or litho printing.

(Continued on page 66)

Paint exhibitors of the 1951 convention showed that the paint problem has been worked on, but not completely solved. The average drying time of the type of silk screen paint used years ago was two or three hours. Later it was cut down to one hour or so. Several years ago, with the introduction of new automatic silk screen printing machines, paint manufacturers came out with a line of paints which were said to air dry within 25 minutes. Last year a 15-minute ink made its appearance and this year some ink people claim that their products will dry in ten minutes or so.

When their claims are analyzed by an impartial experimenter it will be found that they must be qualified to be true. There are inks that will dry in ten minutes—provided certain conditions exist. The surface on which the printing is done must be absorbent. Then, also, some opacity must be sacrificed. Fast drying inks are generally not as opaque as standard paints and inks.

However, due to the unmistakable demand for quick drying paints and inks, and due to the fact that so many paint and ink manufacturers are in the race to produce such a medium for the trade, the time is probably not far off before a fast drying medium will be available to keep up with the pace of production by automatic machines.

Special Paint for Each of Several Different Surfaces

What is an accomplished fact now is the existence of a great variety of special paints and inks available for all types of material and printing surfaces. There are special paints for glass, metal, vinyl, rubber, cloth and other materials. There are paints available to the manufacturer for practically any type of printing surface.

The field of screen process printing is big enough to have made it profitable for paint makers to produce special mixtures for special uses. For instance, for printing on vinyl there is now on the market a paint which, when applied to the material, is so well absorbed into the surface that it is practically impossible to remove it by scratching or scraping.

Special decal lacquers dry with a high luster, are completely flexible and very durable. A paint is available for printing on glass not intended for firing. Another type of silk screen paint is especially formulated for printing on metal to be fired and embossed.

The hit of the paint field is a line of colors that come under the heading of fluorescents. There are three types—daylight fluorescent, black light fluorescent and phosphorescent colors.

Luminous and Bright Colors Now Available

Daylight fluorescent colors are sold under various brand names. These sensational colors are the brightest colors known. In principle, fluorescent colors change absorbed visible and invisible rays of the sun into the dominant color visible to the eye. This generated light, plus their reflective color, give them a neon-like brilliance.

(Continued on page 68)

CLAREMONT

Flock

INDUSTRY'S MOST VERSATILE FINISH

Claremont Flock can be easily applied by air nozzle to glass, wood, paper, metal, fabric or plastic ...of any shape or size. Manufacturing, packaging, and textile fields are now achieving unusual product-finishing effects with this versatile medium. In appearance, the results equal the feel and allure of costly suedes and velvets. Also for finishing, coating, insulating, sound-deadening, shock absorption, bolstering, etc., Claremont Flock proves more workable—more economical. Write for samples and complete details.

18 COLORS —also Black, White and neutral for use in Plastics & Rubber formulations

CLAREMONT WASTE MFG. CO.
CLAREMONT NEW HAMPSHIRE

The World's Largest Manufacturer of Flock and Plastics Fillers

These colors are expensive. They average about $20.00 per gallon; they give only half the coverage of standard paints, and they come in only five colors—neon red, signal green, arc yellow, fire orange and saturn yellow. They have a visibility four times that of ordinary paint and will continue to radiate for about 30 days out of doors. After that time their radiance diminishes imperceptably. Used for interior merchandising displays, daylight fluorescent colors will retain their potency for months.

Blacklight fluorescent paints come in 23 colors. These colors, when exposed to a special type of ultra violet light unit, give off an almost magical radiance, yet there is no glare; they are easy on the eyes.

Phosphorescent luminous paint glows in the dark after exposure to sunlight or other strong source of light. Practical uses: Clock dials, glowing pictures, furniture trim, exit signs, stair railing, etc.

Silk Screen Printing Presses Exhibited

Three manufacturers of automatic silk screen presses displayed their products in action. The General Research & Supply Co. displayed its improved "4-Star General Press". This is basically the same press that made its debut last year but now it has a new aluminum solvent-proof feed bed and a new squeegee lift for easier make-ready and wash-up. The new model is more quiet in operation than its predecessor.

Specification of the press: Sheet size up to 22x30-in.; floor space 110x67-in.; speed, 1500-IPH and up; drive motor, 1½-hp.; height 54-in.; weight, about 4000-lbs. Other models are available to take sheet sizes 30x44-in. and 38x52-in. The 4-Star General Press is not meant for rigid or unyielding surfaces such as wood or inflexible metal; but it is excellent for flexible material such as paper, plastics and cardboard up to 80 point. This press is a favorite among shops specializing in decals and paper work.

The Reinke Co. showed several sizes and type of presses on the convention floor. Its automatic press is designed to take flexible or rigid surfaces up to ⅛-in. in thickness. The operation consists of hand feeding but the press prints and ejects the sheets automatically. Available sizes: 15x22-in., 22x30-in. and 30x44-in. printing area. Speed of operation, 500 to 1000 an hour, depending on size and nature of material handled.

Another Reinke machine is the rotary press, designed specifically for flexible materials. Sizes, 22x30-in., 25x38-in. and 34x45-in., printing area.

Mechanical Squeegee Pusher, Simple and Versatile

What should prove to be of special interest to printers of oversize sheets is the Reinke poster printer. This is really a mechanical "squeegee pusher", simple in construction and versatile in operation. The machine on display was a 44x64-in. model. Surprising to most observers was the fact that the printing unit, which can print a sheet as large as 44x64-in., is comparatively small for the size of work it can

Request For Action...

ATLAS POWDER COMPANY
Industrial Finishes Department

CUSTOMER REQUEST

Register No.:
Sample No.:
Date Promised:
Shipped: Via:

1. Customer: Date:
Street: Salesman:
City & State: Date Wanted:
Attention: Mr.:
Company:
Street:
City & State:

2. Send: ___gallon sample
___gallon reducer
___finished panels
___finished parts
Color chip ( )
Parts for finishing ( )

3. Customer sending wet sample ( )

4. Material Requirements: Specify grade or finish type

5. Match color to: Match gloss to:
Item being finished: Made of:
Surface preparation: Topcoats (if any):
Undercoats (if any):

METHOD OF APPLICATION: ( ) Tumbling ( ) Roll Coating ( ) Squeegeeing ( ) Wiping ( ) Flowing ( ) Whirling
( ) Spraying-Air Pressure ___Pounds ( ) Gravity Feed ( ) Pressure Feed ___Pounds ( ) Cup Gun
( ) Dipping - Drip Time ___ ( ) Hand Dip ( ) Automatic Dip ( ) Withdrawal Speed ___
( ) Automatic Spraying ( ) Electrostatic Spraying ( ) Electrostatic Detearing

REDUCTION: Reducer desired: Reduction desired: To ___ To each: ___
AIR DRYING: Dust free: To handle: To recoat: ( ) Electric Heat
OVEN TYPE: ( ) Box Oven ( ) Direct Fired ( ) Indirect Fired ( ) Conveyor Oven
( ) Infra Red (Electric) ( ) Infra Red (Burdett)
BAKING CYCLE: Time to Peak Heat ___ Time at Peak ___ Time from Peak ___ Peak Temp. ___
SAND, ETC.: Sanded in ___ Hrs. Rubbed in ___ Hrs. Polished ___ Hrs. What Abrasive ___ What Lubricant ___

6. Monthly consumption

ZAPON *Service From Every Angle* starts with the Customer Request. It is the spring board for action in the customer's interest. Infinite details must be checked and re-checked—the thousand and one "little things" that can become real problems.

ZAPON technicians overlook nothing that helps assure a finish that charms the eye on the sales floor and stands up to daily use and abuse . . . or that meets exacting government "specs."

Let a ZAPON Customer Service representative prove *Service From Every Angle* to you.

Service from every angle... that's

ATLAS POWDER COMPANY

Industrial Finishes

ZAPON
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Stamford, Conn. · North Chicago, Ill.

handle. The printing unit consists of a rigid steel constructed flat-top table with an overhead gear that pushes a gigantic squeegee across the surface of the stencil. No special screen frames are required.

Very simple make-ready and inexpensive initial investment should make this mechanical squeegee pusher a favorite among shops that specialize in jumbo size sheets. It will print on metal, wood and paper —in fact, on all types of work that are acceptable for printing by the hand method. If work larger than 44x64-in. has to be printed, a unit can be ordered to accommodate any required size. The feeding and take-off are manual. What the machine does is to take the heavy labor out of printing large size jobs.

Working closely in principle to the Reinke poster printer is a printer manufactured by the Lawson Printing Machine Co. This too is a mechanical squeegee pusher. It uses standard frames, and duplicates hand operated printing except that the squeegee is pushed automatically. Sizes: 22x30-in., 28x44-in., 36x50-in. and 44x60-in.

The squeegee pushers have a distinct advantage over the semi-automatic or completely automatic presses. Feeding is manual and the speed of the press is completely controlled by the operator. In printing flexible, difficult-to-register material such as vinyl sheets, paper, cloth, etc., it is advantageous to have an operator-controlled speed that special care in accuracy of feeding can be exercised. The speed therefore, is governed by the nature of the materials to be printed and the speed of workers.

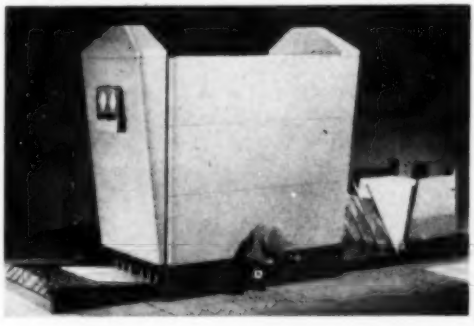
Mechanical Squeegee Pusher, Drying of Paints

As stated previously, the drawback to the popularization of silk screen presses has been the fact that silk screen paints generally do not dry fast enough to keep up with the machine. Manufacturers have long experimented with artificial drying apparatus—usually high heat units. These units are okay for one-color jobs and other work where registration is not important; but heat plays havoc with the stock, especially paper, and throws the register of subsequent colors out of alignment.

At the 1951 silk screen convention a drier was introduced which artificially dries prints at a controlled low temperature level (125° to 135° F.). This is a space saving vertical drying unit that takes stock 22x30-in. or smaller and has an 8-minute drying cycle. The wet prints, thrown on a rotating blade like shelves, make a 4-minute journey through an escalator-like tunnel and take four minutes to come back. The drying machine can be regulated to 600 to 800 prints an

(Continued on page 74)

Paint drier for silk screen process trade.



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A PEARLY PIGMENT

WHERE COST IS A FACTOR . .

Here's the perfect substitute for Pearl Essence where a brilliance almost comparable is acceptable and lower cost is an important factor.

It may be used in the finishing of products made of wood, metal, plastic, glass, paper, cloth or leather. Nacromer is stable, inert, non-corrosive; it supplies long lasting finish to novelty jewelry, flowers, simulated pearls, statuettes, casket hardware, golf club handles, toys, fishing rods and lures, ash trays, book ends, lamps and many other household items. Any desired color can be obtained. Nacromer may even be used to simulate critical metals in short supply. Write for descriptive literature and a generous working sample.

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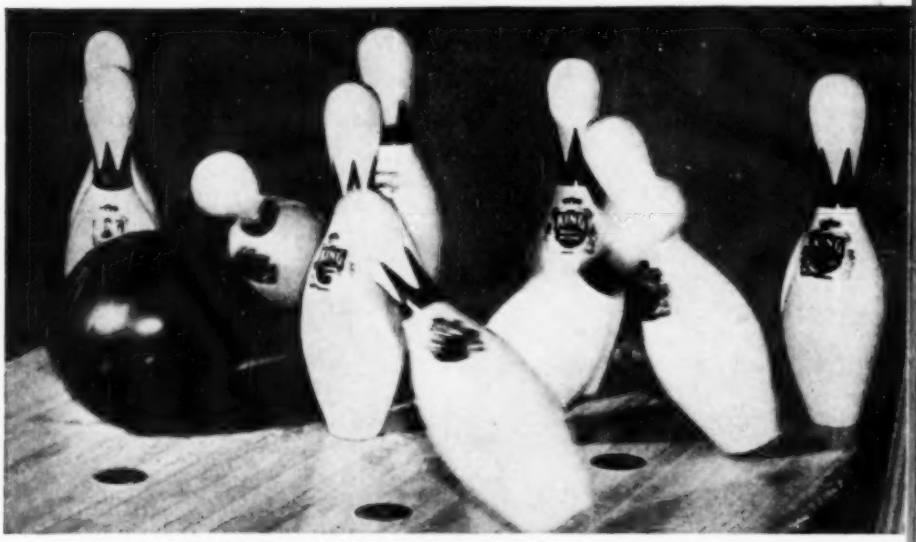
153 WAVERLY PLACE NEW YORK, N. Y.
"World's Largest Producer of Pearl Essence"



BECAUSE BOWLING PINS TAKE SUCH EXTREME PUNISHMENT, they need a finish that can resist hard knocks without chipping or cracking—added protection against splintering, which destroys the bounce and balance required for perfect play. A special formulation of tough, durable Du Pont lacquer meets these requirements—keeps thousands and thousands of bowling pins in service over longer periods of time.

TENPIN FINISH WITH NINE LIVES

Du Pont Lacquer for Bowling Pins—typical of the 12,000 Du Pont finish formulas working for industry today

• Today the extra life of bowling pins finished with a special Du Pont lacquer is a vital factor in the efficient operation of the country's leading bowling alleys.

The formulation of a finish to withstand the continuous, crashing impact of 16-lb. balls, bowled at hurtling speeds, is the result of alert teamwork of Du Pont and a leading manufacturer.

Whether you seek a finish that makes your product last longer—that adds beauty and sales appeal—that requires special properties to fit some particular need—or a finish that may reduce overall production cost—contact the Du Pont Finishes sales technician in your area or write to *E. I. du Pont de Nemours & Co. (Inc.), Finishes Div., Wilmington 98, Del.*

HOW FAST WILL A FINISH FAIL? The Accelerated Weathering Cabinet gives Du Pont paint chemists a speedy answer on the probable rate of fading and chalking. It exposes finished test panels to the destructive ultraviolet rays of a carbon arc. And to increase the severity of the test, a water spray is played on the panels for eighteen minutes of each two-hour cycle.

EYE-CATCHING SALES APPEAL is making Du Pont DULUX the favorite top-coat finish of more and more furniture manufacturers. DULUX produces a rich sheen of lasting beauty that spells quality to the most exacting homeowner. Moreover, because one spray coat does the job of multiple coats of lower-solids finishes, DULUX can cut top-coat costs by 30%, application time by 50%.

WHETHER THE WEATHER blows hot or cold, these transformers are ready. They've just been sprayed with a coat of DULUX. Especially formulated to resist sudden temperature changes without blistering or cracking, this heavy-duty Du Pont enamel provides years of protection for all types of outdoor equipment. And its high resistance to hard knocks, staining and weathering cuts maintenance costs to a minimum.

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BETTER THINGS FOR BETTER LIVING
. . . *THROUGH CHEMISTRY*

Speed WAR Orders on their Way . . .

WITH SILK SCREEN PRINTING

IDEAL FOR PRINTING RIGHT ON YOUR PRODUCT

- Radio Dials
- Instructions
- Instrument Panels
- Code Numbers For Assembling
- Trade Mark or Manufacturer's Name

Hundreds of other uses . . . on wood, metal, fabrics, plastics. Do the work in your shop or sub-contract it to a nearby silk screen printer.

A silk screen department costs very little to set up and pays for itself many times through faster production.

WRITE DEPARTMENT IF II-51 FOR FURTHER INFORMATION

THE NAZ-DAR COMPANY

461 MILWAUKEE AVENUE • CHICAGO 10, ILLINOIS

hour. The dried prints are ejected face down on a receiving platform.

The General Research & Supply Co. revealed plans for its "Pacer" print drier soon to be placed on the market. Specifications are as follows: Sheet size up to 38x52-in.; speed, from two to 30 sheets per minute; capacity, 125 full sheets per cycle. Among its special features are listed the fact that additional capacity can be obtained at any time by adding sections vertically or horizontally. Drying is accomplished without excessive heat where close register is important. Odors are exhausted from the drier automatically. Sheets are delivered to edge stacker, thus eliminating the possibility of sticking due to piled up weight.

Related Materials; Stencil Film and . . . .

An improved water-soluble stencil film good for printing with lacquers, vinyl paints and other synthetics was demonstrated by the Ulano Co. This film cuts like standard film, is transparent and besides being an all around film it offers another advantage. It is adhered to the screen with water and can be washed off the screen the same way. The Craftint Co. also produces a water-soluble film with the same advantages in easy adhering, wash up and versatility.

The Consolidated Photoengravers & Lithographers Equipment Co. introduced an improved screen method which they call the Plasticoat photo method. Claims are that

stencils made by this method will outlast standard carbon tissue screen by about 50%. If so, they should prove worthwhile for photo-screen reproduction of wood grain, all-over designs, etc., for industrial finishing purposes.

Trends and Forecasts

Silk screen printing is no longer an "exclusive" of advertising printin. The future of the process is tied up with allied industries—industrial finishing, the manufacture of toys and games, the electronic industry (for producing current conducting printed surfaces), the glass and ceramic industry (for printing decorations and identification marks), and others. With further developments in presses and driers the silk screen process will continue to find new uses in industry. The trend is toward further and more widespread applications of the process to new uses and new materials, on a fast production basis.

Shell Chemical Builds New Sulphur Recovery Plant

In a move aimed at alleviating the critical shortage of sulfur and its most important compound, sulfuric acid, Shell Chemical Corp. will add to its Houston operations a unit for recovering sulfur from waste refinery gases. Output of the new unit will be sold for conversion to sulfuric acid.

Sulfuric acid, or oil of vitriol, is so fundamental a chemical with so many varied commercial uses (chemicals, oil, steel, paper, paints, to cite a few), that its total consumption provides an index of the industrial activity of any nation.

PUMP PAINT DIRECT FROM PAIL
No transferring to pressure tank. Paintmaster saves time, paint and labor.
Saves mixing time
Paintmaster's built-in agitator keeps paint mixed. Uses rotary gear pump, not air pressure . . no aeration of paint.
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Graco's Paintmaster pumps paint right out of original container. No transfers to pressure pots. No shut-downs for refilling. Less clean-up time.
Saves up to 25% paint!
Big paint savings are possible with a Paintmaster because low operating pressure reduces overspray.
Write for free literature.
5-gal. and 55-gal. models available.
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ATLANTA (opening January 1)

The Theory and Practice of FINISHING FURNITURE

Part II, Bleaching and Staining

FOR VERY light-colored modern finishes on furniture and store fixtures the wood itself must be light in color. Some woods, such as maple and avodire, are uniformly light in color and therefore require no bleaching. However, the beautiful figure in black walnut butt and stump veneers, and the matchless patterns that occur in mahogany may be desired in a blond finish. Also, it is not always practical to select lumber or veneer of uniformly light color—oak and maple, for example. In these cases, then, it is necessary to use a chemical bleach to remove color from the wood.

Usually it is more practical and satisfactory to apply bleaching compound over the entire area, even where it is necessary to remove color from only certain strips or areas. Local or spot bleaching is sometimes done, but it is troublesome and expensive and requires considerable skill.

For production furniture finishing it is generally agreed among furniture finishers that the most powerful and satisfactory commercial bleach is the so-called 2-solution bleach. Two materials are supplied.

Use of Two-Solution Bleaching Compounds

Bleaching with a 2-solution bleach may be done in either of two ways. By one method one solution is applied, followed in a few minutes by the other. The more generally used method is to mix the two solutions in definite proportions just before application. Only enough material for two or three hours' use should be mixed, as the mixture soon loses its effectiveness. If the bleaching action of a mixture is more powerful than necessary, it may be diluted as much as 50% with plain water. Unused material left overnight must be discarded.

[PAGE 76]

The 2-solution bleach can be put on by spraying, brushing or dipping. Only glass, earthenware, wood or vitreous enameled containers may be used, since contact with metal must be avoided as much as possible. Stir the solution with a wooden paddle.

For spraying it is recommended that the bleaching solution be sprayed from a glass container attached to a suction type spray gun —in other words a cup gun. Special guns for spraying bleach have been developed. However, an ordinary spray gun can be used provided the bleach is not left in the gun for long periods of time. The gun for spraying bleaching solution should be washed immediately after use by spraying plain water through it. Apply a very wet coat of bleaching solution to the wood being treated.

If the solution is to be brushed, apply it freely with a fiber brush. Some finishers swab it on with a soft cotton cloth or cotton waste. Operators who handle bleaching materials should wear goggles, rubber gloves and rubber aprons, since any spilled or splashed material may damage their skin. If it does splash on the skin or clothing, wash it off immediately with plain water.

Drying; Sponging, Sanding After Bleaching

The bleaching action is usually completed in about an hour. If the wood is still not light enough in color, more bleach may be applied. Do not attempt to force-dry the wood being bleached until at least an hour after the bleaching solution has been applied; otherwise much of its effectiveness may be lost.

After the bleach-treated wood has air dried about an hour, the chemical residue (from bleaching material) should be sponged off with clear water or a mild acid solution (3 or 4-oz. avdp. sodium bisulfite per gallon of water). Some finishers do not wash off the residue; they rely upon sanding to remove it but the better practice is to wash it off.

The one-solution bleaches, supplied ready for use, are probably easier to use but some finishers consider them less powerful than the 2-solution materials. [*To p. 78*]

Second of a series of authoritative articles that take up practical reasons for finishing new wood furniture and explain details of various factory production systems—from the simple inexpensive jobs on up through medium priced and high grade types of finishing —to produce bleached, natural and color tinted blonds and various medium and dark neutral wood tones. It is a modernized revision of a series of articles that were previously published in this magazine.

The drying of any bleached wood surface should be thorough. Overnight air-drying or force-drying four hours at 130° F. is usually enough if the final coats are to be air-dried. If any of the final coats are to be forced dried, then the bleach should be air-dried 48 hours or force dried for eight hours at 140° F. to prevent blistering.

After the necessary drying time, the bleached surface must be well sanded and all dust blown out of wood pores with a dusting gun, or brushed out with a stiff-bristle brush. If the bleaching agent has been applied lightly, care must be taken to avoid sanding the surface too much, or the darker unbleached areas underneath may be exposed.

Transparent Finishes, With And Without Stain

When transparent finishes are to be used on wood, the wood itself may have such an attractive natural color that no staining is needed to produce a pleasing appearance. Clear finishes penetrate and darken the wood surfaces slightly, at the same time accentuating its figure. Examples are natural maple, birch, black cherry, eastern red cedar, figured red gum, and some of the highly colored imported veneers, such as amaranth, cocobola, ebony and rosewood.

Again, some woods may require only the coloring that a suitable filler will produce. The modern light walnut colors are a typical example of this.

Beautiful woods that require no stain are the exception rather than the rule. Even such highly colored cabinet woods as mahogany, cherry, and red gum will usually show more richness and depth of finish when properly stained, depending upon the particular color effects desired. Light maple and birch are more pleasing in most settings when stained.

Why Are Stains Used? Three Good Reasons

Stains are used for three distinct purposes. The first is to increase the color contrast of the natural figure and thus enhance the distinctive wood grain pattern. The utmost clarity and freedom from smudging are required of stains used for this purpose.

The second function of stains is to produce a more even or uniform over-all tone. This uniform coloring of all areas and parts serves to make the completed piece stand out as a definite unit—each part "belonging", none being "off color." Sap stains and shading stains are applied to local light colored areas to make them match the larger areas of rich dark color. For example, sap walnut is almost white in contrast to the brown heart-wood.

To discard all sap wood or veneer would be very expensive—practically prohibitive in these days — so these areas are usually given a special treatment before application of the over-all body stain. Also, when different pieces or areas in a large panel vary widely in color, pigment wiping stains can be used to produce a more uniform color.

The third function of stains is to produce imitations of more costly cabinet wood colors on woods that have no desirable color or figure. For example a "mahogany bed"

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may have tupelo, poplar, or white gum posts, stretchers and rails which are almost white, in contrast to the rich brownish-red color of the genuine mahogany panels. These light colored surfaces must be given more stain, or they must be shaded with special shading stains to produce an acceptable uniform color throughout.

Stain Helps a Fine Finish to Imitate Expensive Woods

Butternut or birch can be stained to produce an imitation of black walnut; prima vera may be stained to imitate mahogany; poplar, tupelo and white gum may be stained to imitate maple, walnut, mahogany.

Many different materials have been used for staining woods. The first materials were natural dyes and color chemicals which reacted upon the wood or upon each other to produce the desired color. These natural and chemical stains are no longer widely used because they are corrosive, not always dependable, and they are difficult to control. Now they have been almost entirely displaced by stains based upon coal-tar dyes which are light-fast, dependable, easy to use and available in any hue desired. In addition to the dye-base stains there are pigment wiping stains and various specialty stains.

Stains Made of Coal-Tar Dyes

Excellent modern wood stains are made from carefully selected and standardized coal-tar dyes. These are usually acid or direct colors. For staining wood they are used in several ways.

Water stains are made by dissolving these dyes in water. These water-soluble dyes are marketed in powder form, to be dissolved by the user in hot water. They can be bought as individual colors, such as yellow, orange, red, brown and black. The user can make almost any color he desires by using yellow, red and black (usually blue-black) in the proper proportions. Sometimes it is more convenient to use a standard orange or brown as the main base, using small quantities of yellow, red or black to get the exact shade desired.

Stain powders can be purchased already blended to the desired color, the user having only to dissolve the powder in water, with a minimum of measuring. Some water-soluble stain powders are soluble only in water. Others are also soluble in alcohol. The supplier can give you information on this point.

(Continued on page 82)

"Gesundheit"

AS MODERN AS TELEVISION

Gilbert Spruance finishes are kept as modern as television itself — through constant researching, testing and experimentation—in our modern, fully equipped laboratory.

If you have a television set the chances are that the cabinet was finished with Gilbert Spruance stains — fillers — undercoats and lacquers noted for quality, beauty and durability.

If there's a wood finish you wish you had — dreamed about — or just imagined — if there's one you want improved — changed or developed — we invite you to avail yourself of our experience and willingness to work on it for you.

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Water stains should always be mixed in hot water, and in a container of glass, earthenware or vitreous enamel. The use of a metal container may cause the color to change in a short time. From ¼-oz. to 8, 10 or 12-oz. by weight per gallon of water are the usual proportions, depending upon the depth of color desired.

Stain powders may also be dissolved in a small quantity of hot water, and the solution diluted to the required concentration with special water-miscible non-grain-raising solvents which the supplier can furnish. This stain mix produces a minimum of grain raising and a maximum of drying speed. It isn't possible to use all stain powders in this manner; the supplier should be consulted in reference to this feature.

When water stains are to be used the wood should first be sponged with clear water and allowed to dry for four to eight hours. The surface is lightly sanded; then stain is applied. This preliminary wetting, followed by drying and sanding, minimizes the roughening effect (grain raising) usually associated with water staining.

After the stain is dry (4 to 18 hours) the surface is wash coated and again carefully sanded. With care, the initial sponging of the wood may be eliminated, but when this preliminary wetting is omitted the stained and wash coated surface always requires considerable sanding before filling. Where large proportions of alcohol or water-miscible non-grain-raising solvents are used, as just described, little or no sanding is required. The drying time of stain that is made of these solvents may be as little as two hours or even less.

Water stains are best applied by spraying (30-lb. air pressure) or dipping. Brushing may be satisfactory on small areas, as in sap staining. The usual practice is to apply the stain and then allow the surface time to dry. For a more even tone, however, some finishers prefer to apply a very wet coat, and while the surface is still wet, they wipe or blend out the stain with cotton cloths.

Permanent and NGR Stains; How They Are Used

Certain light-fast dyes are soluble in such nonaqueous solvents as Carbitol, Cellosolve, ketones, glycols, and alcohols. These dyes are the basis of some of the non-grain-raising or "permanent" stains. These stains are patented. They are widely used in furniture factories that produce good quality furniture. They have all the light-fastness of water stains. In addition, they do no raise or roughen the wood grain. Their use almost entirely eliminates the sanding which is necessary to smooth up the surface roughening produced by water stains. Also, a drying time of 30 minutes or less, at room temperature, is generally satisfactory for these stains.

Non-grain-raising (NGR) stains are marketed ready for use, or they may be purchased as concentrated liquid colors such as yellow, orange, red, black and brown. These color bases may be blended by the user in the proper proportions and reduced to the desired strength with

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non-grain-raising solvent mixtures furnished by the supplier. The merit of this procedure is that any color may be produced from three or four stock color bases.

These stains are applied just like water stains, except that brushing is even more difficult because of their rapid drying. Wiping is only seldom used for putting on these stains. They can be mixed in and used from metal containers.

Spirit Stains and Their General Characteristics

Spirit stains come in powder form, and are dissolved in alcohol by the furniture finishers. Some spirit stains are also soluble in water. They are almost always made from basic dyestuffs, which are brilliant but also fugitive (subject to fading in light, especially sunlight). Some of these stains will show marked fading in one hour in the sunlight. In general, they are not suitable for high quality furniture; they have limited use.

On very fine work, especially on mahogany, a preliminary sizing of the wood with glue size before staining is an important operation that contributes greatly to the quality of the finish. The wood is sprayed or dipped with a thin glue solution just prior to the final machine sanding. After drying, the final sanding with fine sandpaper produces a glass smooth surface that will take water stain or NGR stain with a minimum of grain-raising. Glue-sizing contributes to the evenness of the final color, the clarity and fullness of the finish.

Some dyes are soluble in oils and such solvents as benzol, toluol, xylol, turpentine and petroleum solvents. These are called oil dyes; they are usually soluble in alcohol.

Oil Stains—Their Merits and Their Limitations

Oil dyes are generally more light-fast than the basic dyes used in most spirit stains, but less effective in this respect than the best acid and direct types used in water and NGR stains. Oil-soluble stains are marketed as powders or in liquid form. Liquid oil stains are usually called penetrating oil stains, and contain up to 32-oz. avdp. of dye per gallon of solvent. They may also contain asphaltum or gilsonite.

Penetrating oil stains find limited use in finishing fine furniture because of their lack of light-fastness and their tendency to bleed into varnishes, lacquers, and other topcoats. However, they dry rapidly (30 to 60 minutes at room temperature) and do not raise the grain. They are usually applied by spraying or dipping; they do not brush on very well.

Pigment Wiping Stains; Application and Drying

The pigment wiping stains, or "pigment oil stains" as some men call them, are used in large volume in the wood furniture industry. These stains are made from translucent color pigments well ground into drying oil or varnish vehicles. Sometimes they also contain asphaltum, gilsonite and small amounts of oil-soluble dyes. They show little tendency to bleed unless they contain relatively large amounts of oil dyes. They are light-fast unless they consist largely of oil dyes.

(Continued on page 86)

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As their name implies, they require wiping to develop their true color and transparency. They are easy to apply. Spraying, dipping, brushing or just swabbing on with a cotton rag are equally satisfactory. After application they are allowed to set from two or three to 30 minutes; they are blended out with rags dampened with stain, or with brushes. They are usually not wiped off clean, because the color would then be too light.

If highlighting (light or dark edges or other areas) is desired, the stain is simply wiped off more at these places. Sometimes, for a deeper or more uniform color, a toner (see further along) is first applied, followed by the pigment stain. Also, if local areas require darkening, more pigment stain may be applied by fogging on a very light coat by spraying.

Normal drying time is 4 to 15 hours at room temperature, or 30 to 60 minutes at 120° to 140° F. Some new pigment stains may be coated over with lacquer or varnish shortly after wiping. The supplier should be consulted in reference to this feature.

Where, Why and How P. W. Stains Are Used

Pigment wiping stains are not as transparent and do not develop the grain pattern as effectively as the dye-base stains. For this reason they are generally used to imitate maple, walnut and mahogany colors on plain unfigured woods. They are seldom used on fine cabinet woods. These stains have what is called a uniforming effect; that is, if a panel is made of several pieces of wood of different colors, a pigment wiping stain tends to produce a more uniform color, whereas dye-base stains are often unsuitable to imitate walnut and mahogany finishes on poplar, tupelo, and white gum. This is especially true if the woods are not straight-grained and have some end grain exposed. On these areas the dye-base stains will develop dark, unsightly spots.

Sap Stains; Trim Stains; Shading Stains; Toners

A number of other specialized stains are used in production furniture finishing. For example, sap stains are used on the sapwood of cabinet woods where the heartwood differs markedly in color from the sapwood, as in walnut and eastern red cedar. Sap stains are applied first of all, before the main or body stain is applied. Water, non-grain-raising and pigment wiping stains, applied by spraying or brushing, are used in most furniture factories. Their object, of course, is to produce a uniform color free of obvious sap (light) streaks.

Trim stains are of the same type and are used on light-colored trim woods (maple, birch, poplar, tupelo, etc.) to make them match the darker panels, or to produce a color contrast.

Shading stains are used for the same purpose as trim stains. They usually consist of a thin lacquer containing dyes or small amounts of transparent color pigments. They are applied by spraying only (20-lbs. air pressure) either over the filler or over the first or sealer coat. Drying time may be two to ten minutes. [*Continued on page 89*]

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REDUCE SCARS & SCRATCHES

WITH

HRJ
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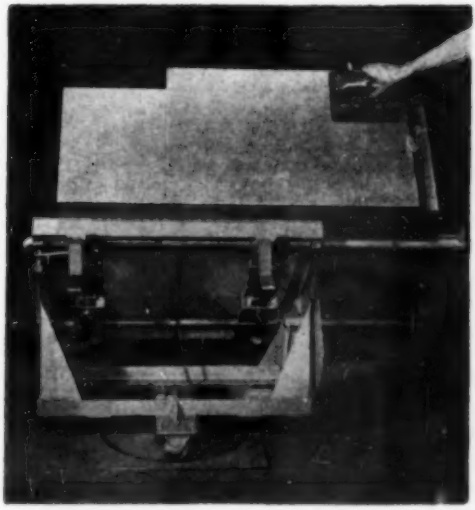

The versatile HRJ Rota-Tilt Table tilted for sanding or rubbing the end of chest . . . the pedal does it. Note how clamps drop down while end is being finished.

The HRJ Rota-Tilt Table has been designed to answer all handling problems in cabinet finishing . . . white wood sanding, rubbing and buffing . . . and is adaptable to all cabinet sizes. Its use will cut sanding time a minimum of 15%—MORE in many cases.

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No matter what type of cabinet you make, the Rota-Tilt Table can handle it—NARROW CHESTS, TELEVISION CABINETS—OR LARGE CASES UP TO 70 INCHES IN WIDTH. Adjustment is simple and quick.

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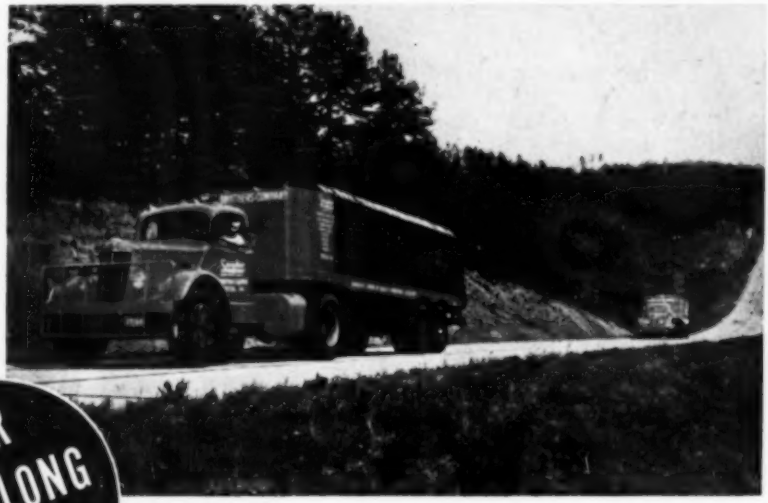

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Care should be exercised to avoid using too much shading stain, because it may spoil the transparency of the finish. Expert finishers use as little as possible to deepen the color or to do any highlighting. High-lighting on a panel may be done by spraying a little shading stain all around the edges, leaving the center lighter in color.

Toners; What They Are; Where and How Used

Transparent toners are similar to shading stains in composition, but they contain less color and are used for different purposes. They are used to produce a background of uniform color, and so are applied over the entire piece. They may be used as a wash coat before filling; as a sealer under pigment wiping stains or glazing stains; over the filler; or over the sealer to produce a deeper, more uniform color. If they contain enough solids (10% to 20%) and sanding agents they may be used as colored sealers. In fact, they are sometimes used as the only coloring material in low-priced work, followed by one or two coats of lacquer. Drying time is 30 to 60 minutes. Toners are usually sanded smooth before other materials are applied — but not always.

Sometimes toners are made with hiding pigments to partly or completely obscure the wood. Thus, the color variations in wood of low quality may be evened up to some extent by applying a very thin coat of a lacquer enamel (of suitable color) reduced to a thin consistency. This thin coating only partially hides the wood. Application of pigment wiping stains over such a toner develops the desired color. The finished effect is to produce a uniform-colored background with most of the grain pattern showing through.

Toners are often used on mahogany to give a light blond finish—this blond effect being accomplished without the trouble and expense of bleaching. A very light ivory or cream colored lacquer enamel is thinned down with four to six times its volume of lacquer thinner and then sprayed on the raw wood. Just enough is put on to "kill" the redness or brown in the mahogany. This surface is lightly sanded and coated with a shellac wash coat. A light blond filler is applied, followed by the sealer and lacquer. This process requires considerable skill but if it is carefully and properly executed the result will closely resemble a bleached mahogany job.

Toners that completely hide (ground coats) are used in graining processes to produce imitation walnut, mahogany and other finishes. Care must be exercised to avoid using too much toner, unless it is for a ground coat; otherwise an artificial "painted look" will result. Sometimes translucent toners are used to cover mineral streaks in maple. Drying time of all toners is 30 to 60 minutes.

Glazes; Wiping Glazes Highlighting

Glazes, or wiping glazes, are similar in all respects to pigment wiping stains, except that they are made to dry more slowly to permit more time for wiping and blending with a brush. They are applied

over glazing sealers or lacquer sealers to deepen the color and to leave highlighted effects where required. They are sprayed on, wiped out with a rag, and then blended with a soft-bristle brush. The process is slow and requires considerable skill, therefore glazing is not too popular in commercial furniture finishing.

In highlighting, the glaze is worked out with the brush until it is deeper where desired. Care must be exercised to leave only a minimum amount of glazing stain on the surface; otherwise transparency and depth will suffer. The normal drying time is 30 minutes to 15 hours at room temperature, but some materials may be coated at once. Shellac makes a satisfactory glazing sealer because the solvents affect it less than other sealers, making possible a cleaner, clearer color, as well as producing better blending properties.

Editor's Note: Part III, to be published next month will include Wash Coating, Filling and Sealing.

Train for Emergency Plant Employee Protection

Two thousand employees of Raytheon Mfg. Co. in Waltham and Newton, Mass., are being trained in plant evacuation and damage control under a program which was inaugurated several months ago.

The program, initiated by Raytheon as a means of safeguarding employees and protecting plant property in the event of a major fire or other emergency, is considered one of the most comprehensive projects of its kind in industry. Under the plan, procedures are set up for rescuing the injured, administering first aid, combatting fire, controlling damage, and establishing fire prevention methods.

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Donald Roberts Appointed to M.&W. Sales Force in N.Y.

Maas & Waldstein Co., manufacturer of lacquers, enamels and synthetic finishes, located in Newark, N. J., Chicago and Los Angeles, announces the addition of another technical service field representative to cover part of the New York territory.

Mr. Donald Roberts has been appointed to the M. & W. sales force and has been assigned to cover a large section of the Metropolitan New York area. Mr. Roberts is experienced in the field of specialized production finishes and has completed a training course in the company's Research and Development Laboratories and Pilot Plant.

Mr. Robert's experience and knowledge of handling all types of specialized production finishes should be of value to manufacturers in the Metropolitan New York area, in making their finishing problems simpler.

R. H. McCormac Ass't to V.P. of American-Marietta

American-Marietta Co. announces that R. H. McCormac has joined its organization as assistant to Vice President Robert E. Pflaumer who has charge of the Company's expanding resin and chemical operations.

Mr. McCormac recently returned to the United States from Buenos Aires after disposing of his interest in Resinas Argentinas, an alkyd resin manufacturing business which he formed in 1946. Resinas Argentinas built and operated Argentina's first plant devoted exclusively to alkyd resins.

For ten years he was associated with the laboratories of another manufacturer of finishing materials in Chicago and later, for seven years, he directed that concern's manufacturing operations in Argentina.

Mr. McCormac brings to American-Marietta a broad and successful background in the paint and resin industry.

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Switch to DETROIT "TAC" RAGS and avoid rejects. Remove all dust, lint and sand quickly, efficiently. The standard for 17 years. Order from your supplier today, or send for sample.

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This Manual gives you the facts, and describes the methods vital to proper use of shellac in the finishing room. A FREE COPY is available to furniture manufacturers for the use of their master finisher and executives. Application must be on the letterhead of the manufacturer. Write for your copy.

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This is no guess work, but a proven fact... definitely established by submitting finished panels to severe abrasion tests.

The tests were conducted by an independent, qualified laboratory employing the "Air Blast Abrasion Tester" and methods specified by the American Society for Testing Materials.

Twenty-eight panels, representative of standard furniture produced in a North Carolina factory, were used—14 in solid and 14 in plywood. A high-pressure stream of grated carborundum was blown onto the finished surface of each panel for a prescribed period, and the surfaces were then carefully compared. *Without exception,* finishes incorporating shellac proved *considerably more abrasion-resistant* than those which did not.

Yes, shellac not only enhances the beauty of woods, but helps furniture "stay on the job." And that means lasting customer satisfaction—repeat orders, word-of-mouth recommendation, more new business for you.

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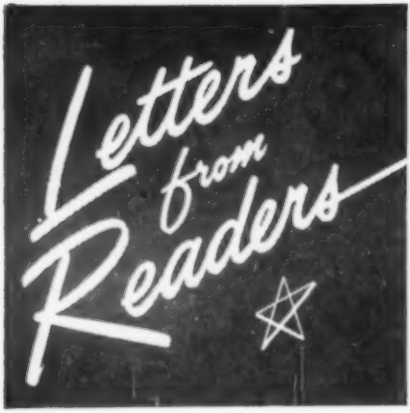

Hot Spraying of Enamel

Please send us all the information you have available concerning the hot spraying of enamel paints. Here at Trenton we are engaged in the manufacture of our automatic washing machine, and are interested in its application to our type of high grade finish. Names of users will be appreciated.—*A. & M.*

Several articles and advertisements about hot spraying have been published in this magazine. You should read every issue carefully and then file it away safely for future reference. The demand for back copies is so great that our supply is soon exhausted.

In a letter we are giving you names and addresses of manufacturers of hot spray equipment.—*Editor.*

Lacquer, Sealer Checking

We are trying to locate an article which was published in this magazine some time ago. We do not know the date of the issue, but the article concerns lacquer and sealer checking, and lists some causes of this defect which are attributable to the manufacturing process in the furniture factory where errors in application may be responsible. We will appreciate any help you can give us. If you can locate the article, send us a copy and bill us.—*W. Furn. Co.*

The subject of checks and cracks in finishes has been included in a number of articles published in *Industrial Finishing*—and in a few cases, complete articles have been written on this subject. Tear sheets of a few of these articles are being sent you.

We urge you to keep all past, present and future copies of the magazine you receive, as every one contains valuable articles and the demand for them is so great that our supply of even old tear sheets is soon exhausted. —*Editor.*

Air Dry Crackle

We want to get information on Air Dry Crackle finish which was written up in *Industrial Finishing*, issue of December 1949. Your cooperation is greatly appreciated.—*S. A. Co.*

The concern's name and address was published in that same issue, with the write-up, see page 94. In a letter we are submitting the information.—*Editor.*

"Why Color Changes" Reprints

In September 1951 issue of *Industrial Finishing*, I am interested in the article "Why Color Changes" by George B. Gibson, and I wonder if you would be kind enough to send me six copies of this article at your earliest convenience.—*W. J., Packaging & Quality Standards, Furniture Dept. 601* . . . .

In September 1951 issue the feature article beginning on page 74, "Why Color Changes in Finished Furniture" is of great interest. I have

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shown it to some of my large furniture manufacturers and they have asked me if I could get them a reprint or extra pages of this article. Can you advise me if it is possible to get reprints of this interesting and informative article?—*G. R.*

Reprints are being made.—*Editor.*

Hard Hammer Finishes

In July 1951 issue of this magazine under "Letters from Readers" (page 84) one reader requested an enamel that would be very hard. Would you kindly send us the names and addresses of concerns that might be able to supply this material?—*V.H.*

Information send by letter.—*Ed.*

Furniture Lacquers

Please give us names and any information of the best manufacturers of furniture lacquers. We want the best qualities for toughness, build and durability. The commercial lacquers we are buying today don't seem to have the durability that we desire.—*M. M. (in Texas).*

Who Makes "Clima-Seal"?

We are writing you for information about a product known as "Clima-Seal" which, we believe, is a material used to prevent excessive swelling and shrinkage of wood furniture drawers due to climatic conditions. We would greatly appreciate it if you could advise us the name of the manufacturer of this product, as well as any other information about it that you may have.—*D. Furn. Co.*

We have never heard of the product nor do we find it in our Trade-Mark Directories. It is evidently a

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In Step with the Times

JAMES B. DAY & CO.

CHICAGO 14

trade name of a product produced by some company that is not well known. However, we feel sure that you can get a satisfactory material for the sealing of wood to prevent entrance of moisture. Consult your regular source of suply or write some of the several finishing material manufacturers who you see advertising in this magazine.—*Editor.*

Roller Coating Machines

We are interested in the roller coating article that begins on page 12 of August 1951 issue of *Industrial Finishing.* Where can we obtain a machine for applying a light coat of paraffin to one side of large folders? These folders vary in size from 9x12-in. to 50x30-in.—*P. F. E. Corp.*

In a letter we are giving you names and addresses of several manufacturers of roller coating machines. —*Editor.*

Window Glass Coating

We recently read of a new material for spraying on window glass to make it translucent. It has the same appearance as frosted glass. We would appreciate your advising where this material is available.—*G. S. Co.*

At the moment we have names and addresses of only two concerns that furnish this material and we are sending you this information by letter. We hope to hear from others who can supply such material.—*Editor.*

We Can Help Them

In October 1951 issue we notice several inquiries pertaining to roller coating equipment. We know we can be of service to these companies as we have made units similar to their application, therefore we would appreciate their names and addresses. —*The Union Tool Corp.*

Information supplied.—*Editor.*

"Don't look now, but I think that louse from the filling department is trying to get your attention again."

Tumble Finishing

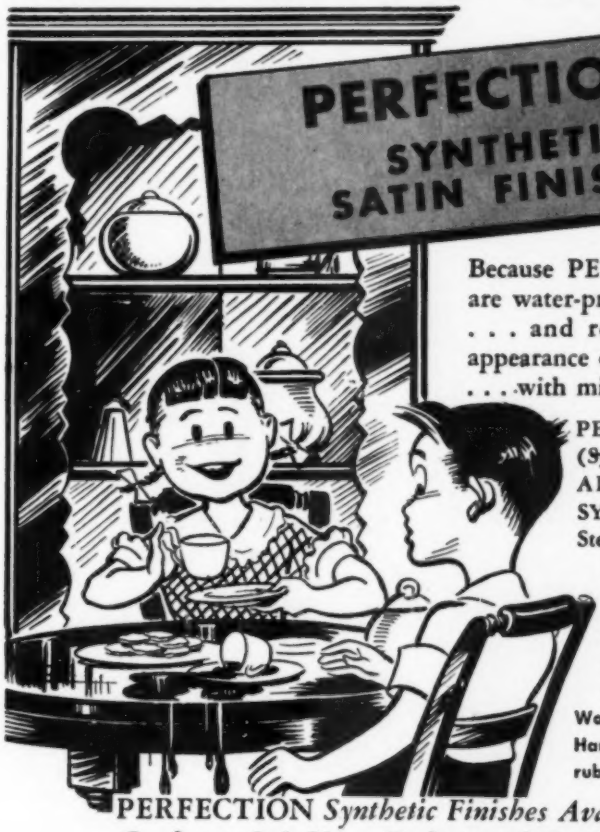
In January 1946 issue of *Industrial Finishing,* you published an article, "Experienced Man Tells About Tumble Finishing", by Robert Boon. Do you, by chance, have a copy or tear sheets on this? If not, would appreciate any information you can furnish on this.—*V. Co.*

I have some wood items that I want to paint by the tumbling process. Can you give me the necessary information regarding materials that are used and what kind of tumbler I must use?

We have done some tumbling, but it was far from being good. Now this job must be perfect and I see no

Mamas DON'T WORRY

WHEN FURNITURE IS FINISHED WITH



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WATER-PROOF LIQUOR-PROOF

other way of painting this job on a production basis. I've got to get this out of the way before Christmas.—*W. Shop.*

Each of you is being sent a copy of a reprint on tumble finishing. Successful tumble finishing requires special materials and special technique in operation. You learn chiefly through your failures and successes.

Another process of coating small items (made of wood, plastic or metal) is dip-whirling. Dip-whirling (centrifugal) machines are advertised in recent issues of this magazine.—*Editor.*

Pearl Essence; Silk Screen . . . .

We are interested in obtaining past and present issues of your magazine in which articles concerning silk screen printing of pearl essence have been published. . . .—*G. Plastics, Ltd., London, England.*

We have published several articles about pearl essence and its uses; also, we have published many articles about silk screen process work. However, I do not recall of any article wherein these two subjects were combined.

Demand for current copies of *Industrial Finishing* Magazine and back copies, tear sheets and reprints have been so great that we have very little left in the way of anything other than a current issue.

Enclosed with a letter, we are sending you a reprint of an article on Pearl Essence Finishing.

For information about silk screen processing, we are pleased to refer you to either of the two books which are listed for sale in our book catalog. Each of these books is well illustrated and covers the subject of silk screen stenciling completely and thoroughly.—*Editor.*

Liquid Granite

Please check your list of Trade Names and, if possible, tell me who makes the varnish called "Liquid Granite"?—*E. F.*

According to our directory, it's a product of Berry Bros., Detroit, Mich. —*Editor.*

"Mr. Johns! You shouldn't walk up behind me so unexpectedly!"

Case Offers Courses, Too

It has come to my attention that the September issue of *Industrial Finishing* lists schools that are offering courses in Paint Technology this year, but to our disappointment Case Institute of Technology (Cleveland, Ohio) is not included in the list.

I thought we had sent you an announcement of our program for this year. In case this was not done I will make it a point to send you one the next time we announce new courses in the coatings field.—*William von Fischer, Head Dept. of Chemistry & Chemical Engineering.*

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SCHAEFER'S Mar-Proof Lacquer is a performance-proven finish that cannot be easily marred or scratched.

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Economical; gives plenty of coverage and dries quickly. Our Mar-Proof Lacquer Sealer is recommended with it for a first-coater.

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Roller Coating Specialists

To Keep Our Conveyor Chain Clean

Our finishing department is conveyorized. A continuous overhead monorail conveyor is used and we are having trouble with dirt, etc., accumulating on the chain and consequently falling on the wet finish.

Could you tell us how to overcome this? Also, have you any suggestions on keeping the steel trays clean?—*K. H. Co.*

There are several methods of solving this problem.

First should come the preventive method; keep the chain and trays clean and free of dirt and overspray from lacquer or enamel. Some of the "dirt" you mention is dried finishing material which loosens and, due to vibration caused by the moving chain, drops onto the freshly finished pieces.

To prevent overspray from getting on the conveyor chain and trays on which furniture rides I suggest that you have some finishing engineer check the air velocity across the front or face of your spray booths. If you do not have 100-ft. to 150-ft. per minute air velocity, your exhaust system doesn't have adequate power or isn't functioning properly. If the air velocity across the face of the spray booth is not sufficient to carry overspray out to the exhaust piping then that overspray will rise and settle on your conveyor chain and hangers.

I assume that only clean filtered air is admitted to your spray room or your spray booth enclosure. If not, then some of the dust and foreign particles may be coming in from adjoining rooms and settling on the wet finished surfaces of your furniture. Preventive measures are always better than corrective measures.

Under the heading of corrective methods to solve the problem would come a device for washing the conveyor chain and its hooks at every cycle. I know of one firm that makes such a washer. The device is set up between the unloading and loading stations. The chain and the metal trays (on which the furniture rides) are automatically washed on each round trip of the conveyor. An automatic oiling device, installed just beyond the exit end of the washer, keeps the chain properly lubricated.

A firm that I have in mind remedied this trouble by installing a double deck of 3/16-in. plywood panels 30-in. wide, starting at the spray booth and continuing along the conveyor for 150 to 180-ft. The lengthwise edges of the panels (at both sides) are reinforced top and bottom with narrow wood strips ¾ x ¾-in.

One deck of plywood is mounted on top of the conveyor rail to catch any dust or dirt particles that may fall from the ceiling. The other deck, below the conveyor rail, is divided

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the flat lacquer that requires

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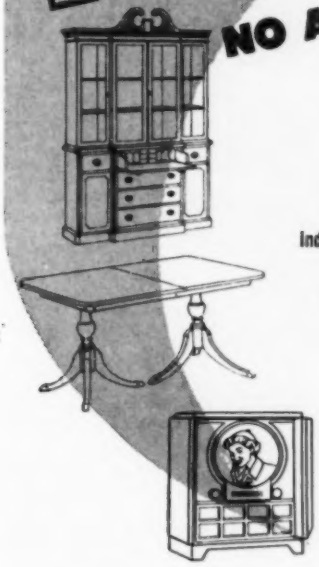

Here's a remarkable furniture and cabinet lacquer that imparts a rich, smooth rubbed effect on any type of wood, yet requires no agitation or hand rubbing!

Because of an exclusive manufacturing process, the flatting agent in BARRETT'S WONDERFLAT stays in suspension indefinitely, even under wide extremes of temperature. This not only eliminates the costly and time-consuming step of agitation but insures complete uniformity of results — each piece takes the same rich depth and satin texture regardless of time interval between jobs.

***TRY IT YOURSELF!** You are invited to write on your company letterhead for prices and a free sample of WONDERFLAT. See for yourself how WONDERFLAT can cut finishing costs and speed production for you!

WONDERFLAT LACQUER is a product of;

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lengthwise to provide a slot or open space along the center to permit the offset carriers to pass through. Both plywood decks are held in place with vertical wires which extend through both panels and fasten over the conveyor rail.

Once a week, when the conveyor is empty, workmen use compressed air guns to blow off both plywood decks to remove any accumulated dust and foreign particles. Each morning, before work starts, and again during noon hour, the floor area is swept clean. Sweeping compound or wet sawdust is scattered over the floor and a wide push-brush is used for sweeping.

Another means of cleaning the conveyor chain, especially where heavy coatings accumulate, is to install a scraping device made of spring steel and a series of tension springs. Two of these devices should be installed, one on each side of the chain and slightly offset in relation to each other. The spring steel scraper contacts the chain on three sides—top, bottom and one side. The top and bottom of the chain are scraped twice.

Rotary wire brushes, mounted on both sides of an overhead conveyor chain, loosen and partly remove any clinging dirt and paint particles. Removal is completed as the conveyor passes through a cleaning solution.

This 2-stage washer automatically cleans overhead conveyor chain and hooks, as the chain travels around its complete circuit. Photo, courtesy of Schmieg Industries, Inc.

Tension springs allow the steel scrapers to move back at each conveyor hook, and then snap into scraping position until the next hook comes along. An open head drum is placed immediately below the scrapers to catch the dried material as it falls. The scraping devices are located between the unloading and loading stations. Continuous scraping keeps the chain reasonably clean.

Still another method of cleaning

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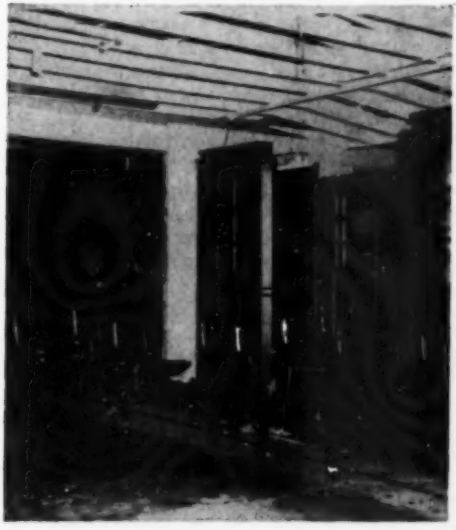

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Then you, too, will want to insure your own competitive position by letting KOCH engineers appraise your problem and offer sound cost-cutting recommendations.

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GEORGE KOCH SONS, INC.
EVANSVILLE, INDIANA

the conveyor chain is to install two circular wire (fine wire) brushes to revolve against the chain, one on each side of the chain. The width of the brushes should be greater than the width of the chain so that the wire brush will contact the top and bottom of the chain as well as its sides. This type of chain cleaner is usually installed inside a power washer in a metal finishing setup; however, it could be used elsewhere by installing an adequate air jet system to blow the loosened particles either into the exhaust system, or into a box or container that could be emptied at regular intervals.

As to keeping the carrier trays clean of overspray, I have in mind at least two methods.

First, if you install a chain and hook washer, these trays and their supports will be automatically washed on each round trip of the conveyor.

The only other method I know of for keeping these trays and their supports clean is to cover them. The tray may be covered with heavy kraft paper or corrugated carton material. Either may be held firmly in place by removable metal cleats. When the heavily coated paper is removed, the accumulated finishing material can be stripped from the metal cleats in a stripper tank, or it may be burned off.

For protecting the vertical supports of trays, I suggest the use of cardboard tubes similar to mailing tubes. If these paper tubes cannot be slipped over the ends, you can slit each tube lengthwise, spread it open and snap it over the sides of the vertical supports. When released it will snap back and almost close the open slit. When these paper tubes and the paper covering for trays become loaded with dried finishing material they may be removed, burned and replaced with clean coverings.

In some cases strippable peel-off coatings, such as are used to coat the insides of spray booths, can be used to coat the trays and tray supports that are hooked to an overhead conveyor chain.—*P. C. Bardin.*

"I think it's a disgrace too, J. L., that the men would stick up such a thing where visitors can see it—let's move it into the office."

Topper Equipment Co. Takes Over Optimus Equipment Co.

Topper Equipment Co. of Matawan, N. J., announces the purchase of the Optimus Equipment Co.'s patents, trade marks, manufacturing rights, sales rights, engineering drawings, as well as certain inventory and machinery pertaining to the vapor degreasing business. This includes industrial vapor degreasers as well as automotive degreasers sold under the trade name of Circo, formerly manufactured by the Circo Products Co. of Cleveland, Ohio.

The Topper Equipment Co., maintains warehouse stocks of trichlorethylene and perchlorethylene degreasing solvents in all major industrial areas. It occupies the same premises as did the Optimus Equipment Co. and most of the same personnel has been retained—including administrative, engineering, sales, distribution and manufacturing personnel.

The Optimus Equipment Co., a subsidiary of Hanson-Van Winkle-Munning Co. of Matawan, N. J., has discontinued operations.

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Cash Must Accompany Order—
Send for Descriptive Circular

INDUSTRIAL FINISHING
1142 N. Meridian St. Indianapolis 4, Ind.

Broom Handle Finishing

We have a large broom handle manufacturing company who is looking for an automatic coating machine for broom handles, something similar to the pencil coating machine. Do you know of any place where we could secure one of these machines, or would you have any suggestion in order to speed up production? The company is now using the regular squeegee system installed on the floor of the finishing room.—*M. P. Co.*

Bignell Machine Co. of Grand Rapids, Mich., took over the business of C. W. Smith, who was making machinery for putting a lacquer finish on wood dowel handles.

They advise that a less expensive method has been discovered for finishing handles and that you might be in position to give us information on this subject. Will you kindly look over your files and see if you have any information available to help us in this matter?—*W. K. Co.*

Broom handles can be coated by dipping or by a combination of dipping and squeegee.

In ordinary dipping, a rack of handles, hanging in vertical position, is let down into a tank of coating material and then slowly withdrawn by a vertical lift or hoist which lifts the rack at a uniform rate of withdrawal so the excess coating material peels off the handles at exactly the same speed. Or, instead of the rack of handles being lowered into and lifted from the tank of coating material, the handles may remain in a fixed position while the tank of coating material is lifted up to immerse the handles, and then slowly withdrawn to allow the excess coating material to peel off at the same rate as the tank is lowered.

This slow steady withdrawal rate assures a smooth glossy coating—that

is, provided the material is properly formulated and is the right viscosity for the work at hand; this method of dipping is not so wasteful of material.

On the other hand, rapid withdrawal and moving of the suspended handles to a point over a drain board results in a coating job that may or may not be satisfactory, and it will certainly result in wastage of some of the flow-off of coating material.

In a letter we are naming some of the manufacturers of dipping machines, although we are not sure which ones, if any, are in position to supply exactly what you need. It may be that a custom built machine will be the answer to your problem.

Now in the dip-squeegee method, a single handle (or a loaded rack of handles) is dipped into coating material and then withdrawn through the smaller hole of a rubber washer which serves as a squeegee to rub off most of the coating material and leave only a thin film of finish clinging to the wood handle. The resulting finish is very smooth and very thin. Two or more coats are usually applied to produce a high quality finish.

A dip-squeegee setup for taking single handles, manually dipped, was described and illustrated in October 1949 issue of this magazine (pages 35 and 36). While this may seem primative and slow, the writer of the article declares that, "One operator working a full 8-hour day can dip 3000 handles 1-in. in diameter on the first coat, or 2000 of the same handles on the second coat. On the ⅝-in. handles he can do 1000 more than the above figures; on the 1⅛-in. handles he will do 500 less." [*To page 112*]

DON'T WASTE LABOR

SCRAPING DOWN SPRAY-BOOTHS

USE LIQUID ENVELOPE

PEELABLE SPRAY-BOOTH COATING

Using expensive labor to scrape down spray-booths costs a lot more than peeling off accumulated overspray in big sheets. Safer, too. Order a 5-gallon Test-Sample at Drum Lot price.

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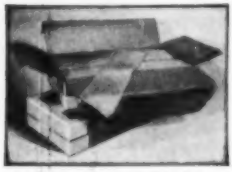

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No matter which way you buy it, you can be sure that every square inch will **stay SOFT and TACKY** until the very last bit is used up.

The Cut Bulk size is 18" x 36"—folded to 4½" x 18" for easy handling. **All of our Tack Cloth is Spontaneous Combustion-Proof, Lint-Free and Wax-Free.** It's clean and sanitary—there's no waste.

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A WARRANTY OF SATISFACTION IN EVERY CARTON

Now whether or not there is a power driven machine or some automatic device for the dip-squeegee finishing of racks of handles on a mass production basis, we do not know at the moment.

We will appreciate hearing from anyone who can tell us or our readers something further on the subject of broom handle finishing.—*Editor.*

To Build Drying Oven

We have a problem in connection with our products which requires us to design and build a small drying oven, using infra-red lamps to maintain a fairly uniform temperature throughout the oven of approximately 150° F.

Undoubtedly you have approved designs or sketches of such ovens and we would appreciate your giving us any information you have available.

Our use of the oven is for batches of small items, usually on screen trays. This oven would not be used with a conveyor but probably should be designed so that several layers of trays could be dried at the same time.

If we can obtain from you the basic features of such a design, we can go on from there. We will appreciate your sending us anything that you have as soon as possible.—*S. F. Co.*

In your proposed infra-red oven drying installation you will naturally want efficiency in performance, economy in operation and maintenance and, last but not least, safety. Many improvements have been made in infra-red drying installations during recent years, and you will want to get the benefit of these technical advances. You will also want to make due allowances for possible future changes in the design and construc-

tion of your products and perhaps in the volume of your production.

Accordingly the wise course of procedure is to first call in a qualified experienced engineer who is intimately familiar with not only one but many modern installations of infra-red drying on a variety of products.

We suggest that you call in a technical representative from one or more of the infra-red drying concerns that advertise in this magazine. This man will study your factory conditions, your products, the operations preceding and following the drying operation, and many other factors which will have more or less bearing upon the drying setup you propose to put in.

Then, with a set of specific facts and conditions to work on, the engineer will be in position to work out a design and quote prices on an installation that will do your job effectively, economically and safely. What he recommends will be based on sound engineering principles and "tailored" to fit your particular conditions and requirements. This service and this kind of an installation will cost money but it will assure you of satisfaction and safety. A homemade installation will cost money too, and it may prove to be very costly in operation and maintenance, as well as being a hazardous setup and one of questionable performance over a period of time.—*Editor.*

We "Must" Have Old Iron

At an emergency conference on Iron & Steel Scrap Salvage, held in Washington recently, Defense Mobilizer Charles E. Wilson declared that he was "shocked" at this winter's steel prospects. He asserted, "This is simply a question of the security of America."

At the same conference Defense Production Administrator Manly Fleischmann declared that scrap collections may be the key to mobilization and possibly will spell the difference "between victory and defeat". We need 36,000,000 tons of iron and steel scrap now.

D. O.

(DEFENSE ORDER)

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Flow Coating

THERE ARE some merits to the process of flow coating as a means of finishing certain products. In the metal finishing field, any large open framework such as bed springs or an automobile chassis lends itself well to this means of paint application. This is generally a conveyorized setup.

Recently I was going through a furniture factory and noticed that they were flowing NGR stain over chairs and tables by hand with a flow nozzle attached to a hose. The finishing foreman was enthusiastic about this operation. He said, "We never have more than 2½ or 3-gallons of stain in the tank. The flow-off stain drains back into the tank from which it is pumped out again through the hose and nozzle. We used to dip our work but this is just as fast, it requires less stain in the finishing room and reduces fire hazard. You will notice that we use a fan-shaped flow stream from a flattened nozzle." —*C. F.*

Blake Paint Corp. Opens New Plant in Orlando, Florida

Blake Paint Corp. has opened a new manufacturing plant at 2491 Kuhl Ave., Orlando, Florida, it is announced by Dudley B. Blake, President. Executive offices will be maintained at this address.

Dudley B. Blake

The corporation was formed over a year ago to supply industrial finishes, consisting of lacquers, paints, synthetic enamels, thinners and vinyl coatings to manufacturers of wood, metal and plastic products.

Operations for the first year evidenced a constant growth of business in the southern area, necessitating promptness in delivery to fulfill the requirements of manufacturers in all southern states. Mr. Blake states that operations are being divided into two divisions, Southern and Northern. All accounts north of the Mason-Dixon line will be serviced by Blake's other factory at 115 Woodworth Ave., Yonkers, N. Y. This plant will also manufacture finishes for accounts in the mid-west and far west. All other accounts will be supplied by the Orlando factory.

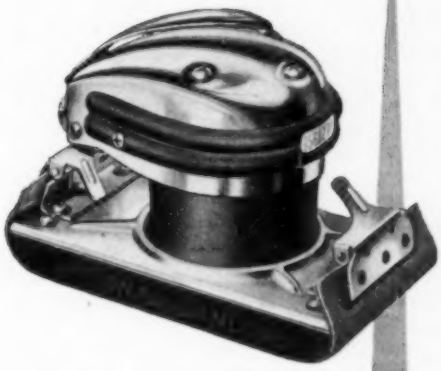
Joseph Hager Honored at G. R. Varnish Corporation Convention

Mr. Joseph A. Hager, Vice-President of the Grand Rapids Varnish Corp., was presented with a Patek Philippe Gold watch and band in recognition of his 25th Anniversary with the company.

Mr. Howard C. Lawrence, President, also presented genuine leather covered lithographed Service Awards to the following: (left to right in picture) Morrie Griep, 15 years service; Frank C. Rice, 5 years; Mr. Lawrence; Al Pesci, 20 years; Mr. Hager; Fred G. Lynch, 20 years; and Robert H. Brill, 5 years.

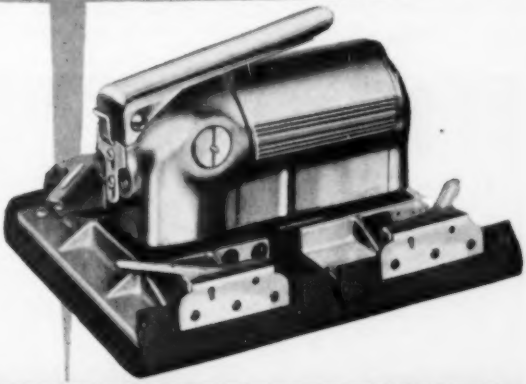
National Sanders

STRAIGHT-LINE *or* ORBITAL ACTION



National offers either orbital or straight-line action in its line of light-weight, fast, portable air sanders. Orbital action for speed and longer abrasive life . . . straight-line action for applying pattern or conforming to grain. No matter what type of sanding is most satisfactory for your needs, be sure and see your National Sander distributor. He is able to advise you impartially as to the machine that will best fill your requirements. Write the factory for details.

- *Light-weight*
- *Powerful*
- *Vibrationless*



NATIONAL NS SANDERS

NATIONAL AIR SANDER, INC.

2820 AUBURN STREET, ROCKFORD, ILLINOIS

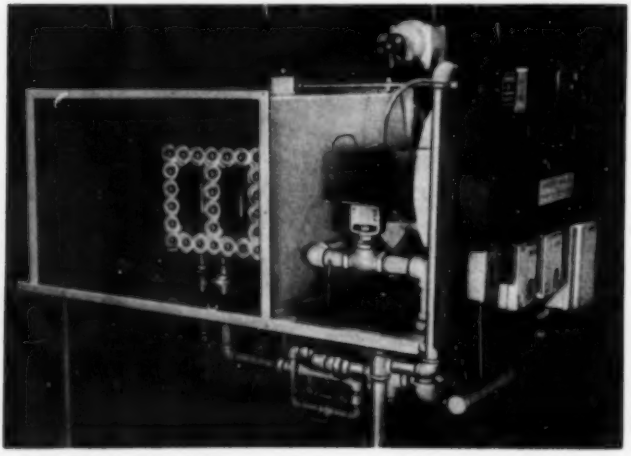
Warm Air Make-up for Paint Spray Booths

According to Mr. C. E. Fitzgerald of Burdett Mfg. Co., 3425 W. Madison St., Chicago 24, Ill., many paint spray booths are operating in confined areas which have inadequate provision for replacing air exhausted by the spray booth fans. In many cases, where make-up air was adequate in the original installation, additional paint spray booths and increased quantities of air removed, were not compensated for.

Operating a paint spray booth under a negative pressure has many disadvantages, the principal one being that an industrial exhaust system designed to move a given quantity of air at a predetermined intake pressure, apparently fails because present operating conditions are not the same as when the original design was made. Reduced intake pressures result in inefficient low capacity fan operation. The booth cannot keep the overspray enclosed; as a result there is an annoying settling of paint spray throughout the general area.

This negative pressure in the room or building also causes drafts from all sources. Wind tunnels created in passageways and halls carry dirty air from other areas into the spray room where it passes over freshly painted work on its way out.

Because of the intermittent operation of most paint spray booths, and the corresponding changing quantities of air being exhausted, a system for meeting these irregular demands for heat and air replacement is needed. A self-contained unit, supplementary to the main heating plant, can be made flexible enough to meet the changing conditions described, as well



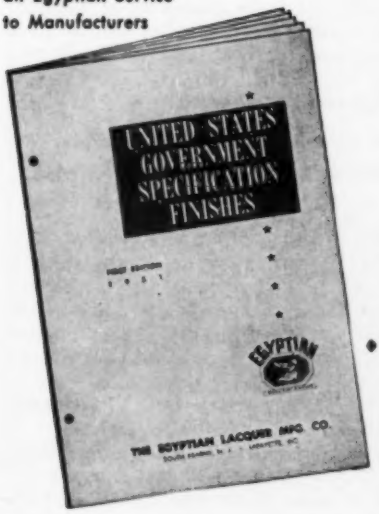
View of industrial warm air make-up equipment designed and manufactured by Burdett Mfg. Co.

EGYPTIAN
INDUSTRIAL FINISHES
Quality

IS NEVER COMPROMISED

Emergency restrictions on materials for the manufacture of consumer goods are multiplying production headaches for You and Egyptian. Delivery delays are inevitable. These we must learn to live with... *but* at Egyptian, despite existing restrictions, even the thought of compromising with quality or deviating from specifications is unforgiveable.

Distributed Free as an Egyptian Service to Manufacturers



If you are confronted with the problem of developing a finish to lengthen the life of your product . . . one to perk up sales, a finishing system to speed up production . . . one to cut costs . . . or a formula to meet rigid defense specifications your best bet is to consult an Egyptian Industrial Finishes Specialist.

Let his specialized knowledge work out your problem within the confines of Egyptian's "NO COMPROMISE WITH QUALITY POLICY."

SYNTHETICS • LACQUERS • VARNISHES • ENAMELS

•• YOURS FOR THE ASKING

The Egyptian U. S. Government Specification Finishes Booklet is a must if you are engaged in defense work. Request your copy on your company letterhead. Please state your title.

THE EGYPTIAN LACQUER MFG. CO.
Box 444, Newark 1, New Jersey
Plants: South Kearny, N. J. • Lafayette, Ind.

as to be stable in the changing air velocities.

An experimental unit, developed by Burdett Mfg. Co. to substantiate Mr. Fitzgerald's theories, has been tested at the Michigan Consolidated Gas Co. laboratory in Detroit. It delivered air at 6000-cfm. maximum. Using the Burdett No. 20 line burners, air could be delivered with a 90° F. temperature rise—bringing —10° F. air up to 80° F. at the booth or in the room.

The open-flame method of heating air was used, therefore the CO tests were of particular interest. Final results showed that the products of combustion, undiluted by air, were fit for human consumption, and did not exceed the allowable amount of CO which, according to Industrial Hygiene Standards, is 10 parts CO in 1,000,000 parts of air by volume.

Because of requirements for variable air quantities, tests were made over a wide range of air velocities with particular attention given to the behavior of the gas flame at extreme high and low air velocities. Results proved satisfactory in that the flame was stable at the higher velocities.

To summarize:

1) Through personal acquaintance with the industry, Mr. Fitzgerald of the Burdett Mfg. Co. has found a great need for a warm air make-up for both small and large paint spray booth users.

2) Based on his findings he designed an experimental unit of 6000-cfm. maximum capacity, capable of raising intake air as much as 90° F.

3) This pilot model, using radiant-heat gas burners, met all the safety requirements relative to the products of combustion.

4) The open flame was stable in air velocities over twice the velocities required under ordinary operating conditions.

It is understood that standard units in three sizes will be made available —6000-cfm., 12,000-cfm., and 24,000-cfm. for practical solution to the present needs of industry.

Cut-to-Shape Masks Speed Production

For masking name plates, dials, gauges, machined parts, holes, threads, engraved and embossed letters, plated and polished sections, or any shaped surface, pressure sensitive masks are available.

Known as Quik-Masks, they provide low cost protection during spray painting, cleaning, plating, machining, tumbling, sandblasting, polishing and assembly operations.

They come pre-cut to the exact size and shape required, and are either mounted several masks to a card, or individually with each mask having its own folded liner on the adhesive side.

Hundreds of standard shaped masks are available from stock, or any special shape can be made to exact requirements from blueprint or sample.

A bulletin and samples will be sent free upon request to W. H. Brady Co., Dept. 237, 1657 E. Spring St., Chippewa Falls, Wisc.

Hard, High-Resistant Varnish for Wood Products

Development of a new type of high gloss varnish that air dries rapidly to extreme hardness, and thereby gives maximum protection to a wide variety of wood products, is announced today by The Monroe Sander Corp., 10-18 46th Ave., Long Island City 1, N. Y., manufacturer of industrial finishes.

The new varnish, known as Sanco No. 77CW, was developed through the use of new synthetics. It is particularly desirable for finishing products

EXPERIENCED

"Custom-built" Industrial Finishes result from experience, the combined experience of the manufacturer and the men who make the paint. The men at Mansfield Paint are experienced in working with manufacturers to achieve the right finish for any industrial product.

The MANSFIELD PAINT COMPANY
Mansfield, Ohio Chicago, Illinois

FINISHES FOR INDUSTRIAL PRODUCTS

that are subject to constant hard use, require high resistance to chemicals and water, and must be also non-scratch and abrasion resistant.

The unusual hardness and high gloss retention achieved by using the new varnish, makes it well suited for various types of furniture that receive much punishment in the home, schools, hotels, stores, restaurants, and the like. It is also highly desirable for tool handles; industrial equipment; floors in homes; institutions and gymnasiums; radios and television sets; and various types of sporting equipment including skis, tennis rackets, baseball bats, fishing rods, golf woods, bowling alleys and pins, and billiard tables and cues.

Paint Sunken and Raised Designs With "Lacquer-Stik"

"Lacquer-Stik" is a highly specialized paint, compounded and prepared in stick form, for use solely as a wipe-on. After it is applied the paint soon hardens and becomes permanent. The "fill-in" will expand and contract with the part and can be subjected to temperatures as high as 500° F.

This paint in stick form is easily applied at the point most convenient in the manufacturing process; it requires no special skill or equipment. The paint cannot spatter on other parts or materials; it will not rub off or smear when handled after application. It is a means of bringing out clearly the stamped impressions or engravings on all smooth surfaces, regardless of the character of the material.

"Lacquer-Stick" is a product of Lake Chemical Co., 3052 W. Carroll Ave., Chicago 12, Ill.

Use it like a crayon . . . . . no spatter.

Infra-Red Strip Unit

A new single or multiple row Infra-Red heating unit is announced by the Wil-Son Mfg. Co., Dept. IF, Cloverport, Ky.

Wil-Son Infra-Red Heating Unit.

These new economy strip heating units are available in 24, 32, and 48-in., and are equipped with asbestos insulation to provide maximum heating efficiency. These strip heating units have adjustment ear lugs projecting out from both sides, which permit any number of these units to be joined together, both side by side, and end to end. Various socket spacings are available. For example, the 48-in. unit is supplied with 6, 8, or 9 sockets.

A complete line of attachment feet and other mounting bracket accessories can be had. Sockets are mounted in stagger arrangement, which provides an overlapping, perfectly smooth heat pattern.

These units are designed for use

WE NEED YOUR EMPTY DRUMS

The problem of obtaining enough metal chemical containers to avoid shipping delays has become acute

THE prompt return of our empty drums will relieve the situation substantially . . . will help to keep the flow of chemicals moving to you.

Every drum of Shell chemicals now carries self-addressed return markings. You simply have your delivery agent pick up the drum when empty and return it to the address on the label...freight collect.

Return your empties...you'll get your chemicals quicker.

SHELL CHEMICAL CORPORATION

CHEMICAL PARTNER OF INDUSTRY AND AGRICULTURE

EASTERN DIVISION:
500 Fifth Avenue, New York 18

WESTERN DIVISION:
100 Bush Street, San Francisco 6

Los Angeles • Houston • St. Louis • Chicago
Cleveland • Boston • Detroit • Newark

IN CANADA
Shell Oil Company of Canada, Limited
Toronto • Montreal • Vancouver

with high efficiency R-40 heat reflector lamps, and are constructed of heavy gauge zinc coated steel, which is unaffected by heat. Units are designed primarily for building into special locations where a conventional Infra-Red oven might not be convenient to install or use.

New Chlorinated Rubber Offered by Hercules

Hercules Powder Co., Wilmington, Dela., has introduced a stabilized grade of chlorinated rubber that will give paint manufacturers a marked improvement in heat and light stability, better weathering, and a reduction in under-film rusting.

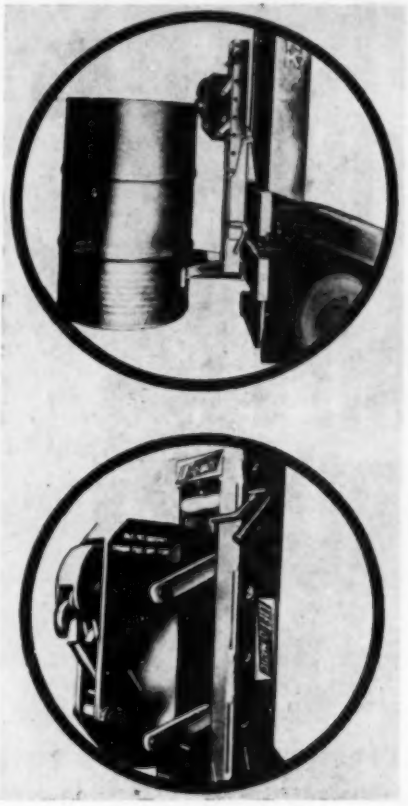
Available at no extra cost, stabilized Parlon (Hercules chlorinated rubber) retains the natural advantages of the original product, which has been used for many years as base for industrial maintenance paints. These paints are especially resistant to alkalies, acids, fumes, and other corrosive elements that attack metal surfaces.

The new form of Parlon contains a small amount of an epoxy-type stabilizer that is water-insoluble, and readily compatible with the resins and solvents normally used in formulating the finished paints.

Hercules reports that paints made from the new stabilized Parlon also have better "can stability"—minimizing corrosion of the interior of metal containers in which Parlon-base paints are packaged.

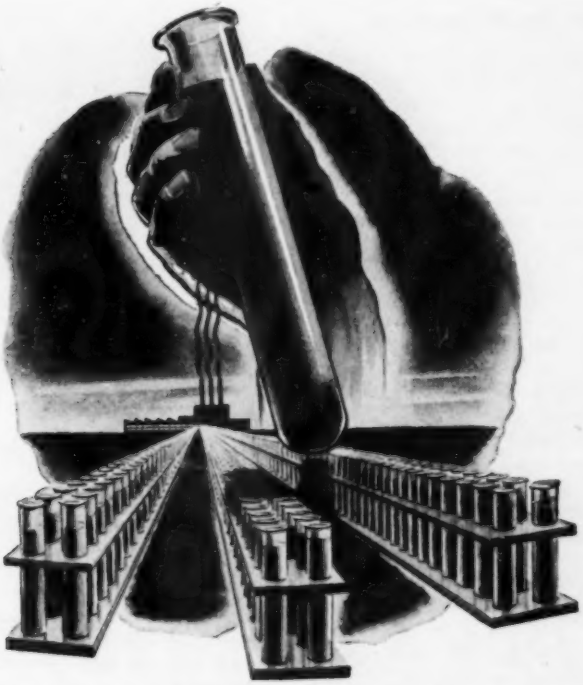
Liftomatic Power Truck Attachment for Drums

Marvel Industries, Inc., 2224 Cleveland St., Evanston, Ill., announces the new Liftomatic Power Truck Attachment for handling drums.



Holds and moves heavy drums easily, safely.

Made to fit any make power truck, the Liftomatic can be attached or removed from the truck by one operator in just a few minutes. Any drum can be handled, fiber or steel, regardless of diameter, height or bead or rim size. The Liftomatic is mechanical and completely automatic. No additional power controls are needed, as pick-up and release are effected through raising or lowering the truck cylinder. Liftomatic allows transportation, tiering and exact placement without the use of pallets or dunnage.



IS "GOOD" EVER GOOD ENOUGH?

During our 67 years we've produced many millions of gallons of protective coatings, adhesives, and solvent blends. As a consequence, a product rating of "GOOD" would seem reasonable. In our evaluations, however, "*good*" *is never good enough if we can make it better.* Maximum performance at minimum cost requires the everlasting research of a devoted and competent organization. The resulting benefits are most evident in the commercial and defense industries we serve . . . benefits that are yours for the asking.

A booklet titled "ALL ABOUT US" will be sent if requested on your letterhead.

P&S
SINCE 1884

PIERCE & STEVENS, INC., 728 Ohio Street, Buffalo 3, N. Y.

In Canada: Pierce & Stevens Canada, Ltd., Fort Erie, Ontario

LACQUERS • PROTECTIVE COATINGS • ADHESIVES • FABULON • FABULOT • SOLVENT BLENDS • REDUCERS • CLEANERS

Heat Proof Coatings

Markal heat-proof protective coatings, made and sold by Markal Co., 3052 W. Carroll Ave., Chicago 12, Ill., can be applied like paint, and they give excellent coverage. They are not decorative paints — but a chemical treatment for metals to protect them against scaling and corrosion at high temperatures.

These protective coatings are manufactured in various types for specific purposes. For example, special coatings can be had for the following problems:

1) Protection of metals against hot acids and mild alkalies.

2) Protection of metals against corrosion and scaling at temperatures up to 1850° F.

3) Protection of metals that have to be annealed, against corrosion and oxidation.

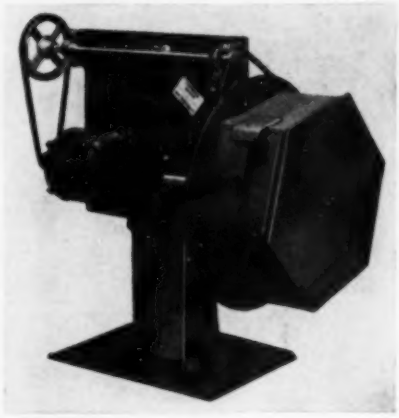
4) Protection of metals against scaling and oxidation at 0° F. to 1200° F.

5) For masking-off carburization at temperatures up to 2100° F.

Protective coatings are available for use on exhausts, blowers, mufflers, high pressure boilers, breeches, stokers and burners, furnaces and furnace doors, etc. These protective coatings can be used for both maintenance and production work. The manufacturer welcomes requests for consultation on specific applications involving Markal heat-proof coatings.

Portable Tumbler-Mixer

A portable, Universal Tumbler-Mixer that will mix or tumble anything and can quickly be moved from one job to another is announced by Rampe Mfg. C., 3320 St. Clair Ave., Cleveland 14, Ohio. It tilts through a full 90° arc so that the work can be tumbled at whatever angle is desired. The Tumbler-Mixer is adapted to many



Is 35-in. high; weighs 80-lbs.

uses due to its adjustable turntable clamps that allow standard and odd shaped containers to be used. It will hold a 5-gallon pail, wooden box, can, jug, laboratory beaker or any other shaped container. Regular steel octagon tumbling barrels or hexagon burring barrels are available as extra equipment.

Specifications include anti-friction bearings throughout, 1/6-hp. motor, 19-in. turntable.

Prufcoat Heavy-Duty Primer

Here is a metal primer that works well with both active-solvent protective coatings and conventional paints. It is designed to be effective on the severely corroded metal surfaces so commonly found in process plants.

Prufcoat Primer P-50 has the application simplicity of—and serves the purpose of—the commonly used zinc chromate and red lead types of primers. Unlike conventional primers, however, it requires only overnight drying prior to the application of active-solvent finish coats such as Prufcoat Protective Coatings.

This new primer is composed of a

"It's your own fault, Digby! When you said 'Really smooth!' she didn't know you meant the finish on those table tops!"

Bring out the full beauty and smoothness of your Finishes with

S-I-P CLEEN-UP POLISH

Increase the sales appeal of your products with genuine S-I-P CLEEN-UP POLISH. No fuss, no bother, no hard rubbing—just "wipe it on and wipe it off!" Made and guaranteed by the makers of famous WEAR MASTER Finishes . . . and you can try it FREE. Just mail the coupon.

SAMPLE FREE!

STANDARD INDUSTRIAL PRODUCTS, INC.

EVANSVILLE 4, INDIANA

YES, We'll Try
S-I-P CLEEN-UP POLISH
Send Free Sample. No Obligation.

Name_____

Address_____

City_____

State_____

heavy-bodied oil-modified synthetic resin vehicle, carrying a high percentage of inhibitive pigments, principally zinc chromate. The Primer P-50 vehicle is such that the pigments are completely free to perform their rust inhibitive function. Thus, under-film corrosion is effectively prevented. It is a product of Prufcoat Laboratories, Inc., 50 E. 42nd St., New York 17.

Finishing Clinics Initiated by Maas & Waldstein Co.

The second in a series of clinics on finishing developments and problems was recently conducted in Lancaster, Pennsylvania by Maas & Waldstein Co., manufacturer of industrial finishes in Newark, Chicago and Los Angeles.

"It is our intention", stated Mr. B. F. Ames, General Sales Manager of Maas & Waldstein Co., "to hold similar clinics in other key marketing centers across the United States, as our contribution to the technological advancement of the finishing industry."

Mr. Ames' paper was based on the use of organic coatings during the national emergency.

Mr. R. S. Benjamin, one of M & W's Sales Engineers in the Philadelphia territory, discussed the subjects of electrostatic spraying of finishes, its field of usefulness and its limitations as well as the care and handling of spray equipment. Mr. Benjamin also discussed the use of infra-red baking facilities.

A question and answer period followed the discussions and lasted for almost two hours.

Forty-five engineers, chemists, electroplaters, and representatives of top management in industry attended the clinic.

Dr. A. C. Elm, Tech Director of Standard-Toch Chemicals

The appointment of Dr. A. C. Elm, as Technical Director of Standard-Toch Chemicals, Inc., is announced by the President, Mr. M. H. Corbin. Dr. Elm has had extensive experience in various branches of the protective coatings industry. He has published many technical papers on paint technology and is the holder of several patents. During the past 22 years, he was a member of the staffs of leading paint companies.

A member of the American Chemical Society, Dr. Elm has served as Secretary-Treasurer and Chairman of the Division of Paint, Varnish & Plastic Chemistry and as an executive of the Lehigh Valley section of the Society. He is a member of the Federation of Paint & Varnish Production Clubs and a Fellow of the American Institute of Chemists.

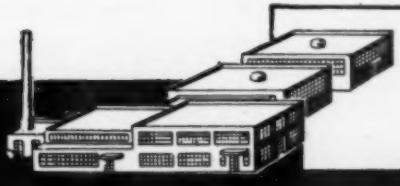
Left to right in the photograph: Mr. D. P. Volino, M & W Representative, York Lancaster, Philadelphia area; Mr. William Fordney, Sr. Chemist, Hamilton Watch Company, (Vice President of Lancaster Branch AES); Mr. Ames; Mr. J. Edward Bemiller, Plating Superintendent, Hanover Wire Cloth Co., Continental Wire and Steel Industries (President of Lancaster Branch AES); Mr. R. S. Benjamin, Maas & Waldstein Co., Philadelphia area.

Inside the formula of every **RANDOLPH FINISH . . . .**

Randolph Finishes—developed over 18 years of intensive research and experience—are playing a mighty part in today's production drive. Producers of both defense and civilian goods are coming to Randolph for coatings that serve their products best. Dress up your product, give it its staunchest surface and new sales vigor with a Randolph Finish!

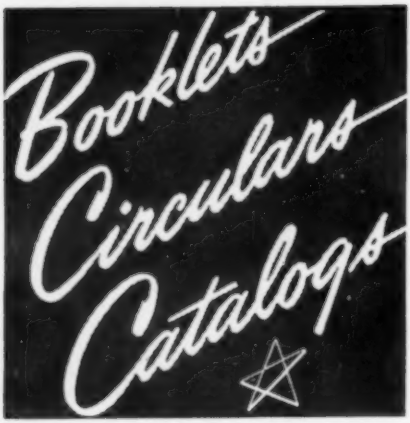
DEPENDABILITY
SUITABILITY
QUALITY
SERVICE

Every Randolph salesman is a technician—thoroughly experienced in his field. Discuss your finishing problems with him freely. Call on Randolph's technical resources for more dependable and economical production.



RANDOLPH
PRODUCTS COMPANY
CARLSTADT, NEW JERSEY

DOPES · LACQUERS · ENAMELS · THINNERS



Agilene (Polyethylene) Plastic

A 4-page folder, 8½x11-in., printed in two colors, explains the characteristics and properties of Agilene, a plastic material from which can be formed many products formerly made of metal. Agilene is a product of American Agile Corp., Plastics Divn., 5806 Hough Ave., Cleveland 3, Ohio.

Clean Cork Bulletin Board

A new development that keeps cork boards clean five times as long, even under dusty conditions, is now being used in the entire Dav-Son line, it is announced by the A. C. Davenport & Sons Co., 311 N. Desplaines St., Chicago 6, Ill., manufacturer of Cork Back Boards, Bulletin Boards, Plant Safety Boards and other identification devices.

Metal Cleaning Book Free

Oakite Products, Inc., 132F Thames St., New York 6, N.Y., manufacturer of specialized cleaning and allied materials, announces the publication of a 28-page illustrated booklet, "Four Good Steps Toward Better Electroplating on Steel," giving specific recommendations for effecting improvements in the average cycle for cleaning steel before electroplating.

Phosphate Treatment for Metals; Free Booklet

A new 8-page booklet (8½x11-in.) describing "Anchorite 100," a paint-anchoring corrosion-resistant phosphate treatment for metals has just been published by Octagon Process, Inc., 15 Bank St., Staten Island 1, N. Y. Attractively printed in two colors, the booklet describes in detail the common causes of paint failure and how they can be prevented. It then goes into methods of application—immersion and spraying—of the Anchorite 100 treatment.

A separate discussion of typical products to which the Anchorite 100 process can be applied is well illustrated, and includes a number of defense items. The booklet points out that Anchorite 100 is one of the few pre-painting treatments that meets the specifications for Class C (Type II) finish in U. S. Army specification No. 57-02C, as well as JAN-C-490, Grade 1.

Rust Preventives

To simplify for industrial plant men the selection of products complying with government specifications, E. F. Houghton & Co. has issued an 8-page booklet entitled, "Houghton's Government Specification Products." Rust preventives and metal working aids are included.

For a free copy of this helpful booklet, write to E. F. Houghton & Co., 303 W. Lehigh Ave., Philadelphia 33, Pa.

Laykold Fibrecoat

A new 4-page brochure, printed in three colors, gives detailed application data and lists many uses of "Laykold Fibrecoat," a weatherproof mineral-armored asphalt. The folder includes specifications, application data, approximate costs, and illustrated, detailed information regarding equipment used in applying the product.

The booklet may be obtained, free of charge, by writing American Bitumuls & Asphalt Co., 200 Bush Street, San Francisco 4, California.

Hot Lacquer Process—Facts Given in Free Brochure

The increasing importance of the hot lacquer process in furniture finishing is outlined in a new brochure on Heetclad, published by The Sherwin-Williams Co., General Industrial Division, Cleveland 1, Ohio.

The brochure cites these merits of hot lacquer:

Saves the cost of extra operation; one hot spray application generally is equivalent to two cold sprays.

Saves extra handling of pieces, to and from spray booths, thereby increasing production.

Saves additional overspray loss from second spraying operation.

Saves fixed charges necessary to maintain the extra spray station, and to provide storage for drying between coats.

"Generally speaking, the hot spray process lends itself to use in almost any application where cold spray can be

A Quick, Smooth, Uniform coating—assured by
BARRETT GALVANIZING AND HOT TINNING CENTRIFUGALS

BARRETT CENTRIFUGAL GALVANIZER is driven with high torque head and has an equalized disc brake for quick stop.

With the Barrett Whizo Galvanizer, excess metal is quickly removed from small parts after dipping in molten metal, in fact, much faster and more uniform production is assured. Parts will also pass the most rigid inspection for quality.

The method of handling is simple and easy. Work to be coated is placed in a round basket and submerged in molten metal. When thoroughly heated, the basket is placed in the Barrett Centrifugal to be immediately accelerated to high speed, the excess metal being thrown off before it can cool.

A quick pick up and stop (from 2 to 3 seconds each) assures maximum production with an even thickness of coating.

Machines furnished with or without heated surrounding drum, in capacities from 40 to 240 loads per hour, handling from 5 to 100 lb. loads. When used for tinning threaded work, rethreading has been found to be unnecessary.

Barrett Centrifugals are used extensively, combine speed with convenience of operation and the utmost in safety. They are highly developed to meet all reasonable requirements, have self-contained motor drive and occupy a minimum of floor space.

Send at once for full details of Barrett Centrifugal Galvanizer

THE LEON J. BARRETT COMPANY
Designers and Builders of Centrifugal Machinery
1703 GRAFTON ROAD WORCESTER 1, MASS.

Form-A-Roc • *FIRST COAT*

FOUNDATION FOR FINE FINISH

1. Dries with lacquer speed.
2. Has double lacquer solids at spray gun.
3. Fills very well—sands easily.
4. Adheres tenaciously to steel, wood, presdwood, aluminum, galvanized metal, etc.
5. Holds out lacquer, synthetic or oleoresinous enamels exceptionally well.
6. Thins 3:1 with xylol.
7. Available in GREY, SALMON and OFF-WHITE.
8. Ground well to smooth texture.

MADE BY

THE VARNISH PRODUCTS COMPANY

5206 Harvard Avenue Cleveland, Ohio

used," says the brochure. "It is finding increasing acceptance and usage for production finishing of such pieces as radio and television cabinets, case goods, store and office equipment and the arms and legs of upholstered furniture."

The booklet lists typical hot lacquer finishing systems for store fixtures, desk and office equipment, maple finish on solid birch dining room furniture, gray walnut finish on walnut case goods, TV and finish for mahogany TV cabinets, lacquer finish on mahogany case goods,

Gov't Spec. Finishes Booklet Offered Free

The Egyptian Lacquer Mfg. Co. of South Kearny, N. J. and Lafayette, Ind., in an effort to be of service to product manufacturers and commercial finishers, has published a booklet listing practically all United States Government Specification Finishes issued to date of this printing.

The booklet lists the United States Government Specification Code No., gives complete ingredient detail and shows drying periods required between applications. As new specifications are released the company will make supplements available.

When requesting a copy of this valuable free booklet, please use your company letterhead and state your title or connection. Address requests for booklet to Egyptian Lacquer Mfg. Co., Box 444, Newark 1, New Jersey.

"Sprayways"—16 Pages of Spray Painting Pictures

"Sprayways," a new graphic 16-page rotogravure brochure introduced by the DeVilbiss Co., is being distributed to industrial executives, distributors, jobbers, libraries, schools, technical organizations and others interested in the varied uses of spray painting equipment.

The publication, which had an initial press run of 100,000, has a cover photograph of a recent DeVilbiss development —a traveling spray booth being used for the finishing of a diesel locomotive.

The brochure is a ready reference to many DeVilbiss spray equipment uses and is designed to fit standard file folders.

Nearly 100 photographs have been incorporated in the publication to graphically display the many spray equipment uses. The photographs are actual scenes taken in industrial plants, on the farm, in shipyards and in many other places where spray painting is being used.

The publication stresses the DeVilbiss service of engineering its equipment to the manufacturer's needs. One page is devoted to the company's new customer research center and spray painting school where all sorts of finishing problems are handled.

The school is operated free of charge for DeVilbiss customers and has an alumni group numbering in the thousands. Mr. Frey, director of sales promotion and advertising, declares that the teaching of correct techniques in spray painting alone has saved thousands and thousands of dollars for manufacturers, contract painters and others.

Automatic spray painting machines illustrated in the brochure are on display at the customer research center. These machines are but a few of the standardized units on display there. All of the machines and spray equipment in the research center are used to solve customer finishing problems.

One section of the publication has scenes taken inside the DeVilbiss plant showing rigid quality control and manufacturing procedures.

Decimal Equivalent Decal Free

As a service to engineers, designers and draftsmen, The Meyercord Co., Chicago, decalcomania manufacturer, is offering a free decimal equivalent decal transfer designed for application to slide rules, T-squares, desk tops, drawing boards and other mechanical drawing equipment.

The new decal (1¼x6-in.) can easily be applied on any smooth surface. Just dip it in water and apply to a convenient spot on work table or equipment. Washable, colorfast and durable, it will last indefinitely and save hours of searching for easily misplaced reference charts.

To obtain one of the new decimal equivalent transfers, write to Dept. Q, The Meyercord Co., 5323 W. Lake St., Chicago 44, Ill.

Adhesives, Coatings and Sealers; Free Booklet Offered

Research help in using adhesives, coatings and sealers in product design and engineering is offered in a new 8-page handbook available from Minnesota Mining & Mfg. Co., 411 Piquette, Detroit 2, Michigan.

The booklet, revised to include 1951 data, reports the availability of 1000 different basic formulas; provides technical data on 11 adhesives, 7 coatings and 7 sealers; and offers field and laboratory assistance in solving the adhesive problems of other manufacturers.

Sixteen different design problems and their solutions are pictured and described —coatings to protect metal against corrosion and against marring during fabrication; sealers to achieve tight joints despite fuels and flexing; and adhesives to make products both lighter and stronger.

"U. S." DRUM MIXERS

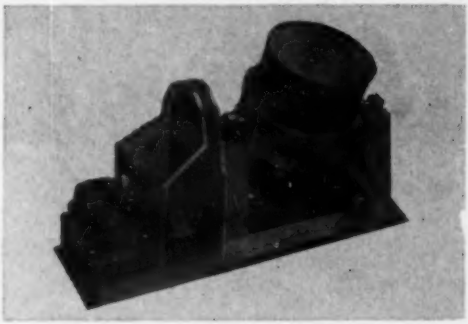
SAVE TIME!!

★ Reduce handling
★ Eliminate "clean-up"
★ Get fast, thorough mixing
★ Load and unload quickly

SAVE MONEY!!

★ Mix in supplier's drums
★ Avoid contamination
★ Do variety of mixing on one unit.
★ Use rugged, dependable equipment

171-C



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Ask For Bulletin 265

U. S. STONEWARE
AKRON 9, OHIO
PROCESS EQUIPMENT DIVISION

NON-INJURIOUS **ELECTRO** NON-INFLAMMABLE

COLD STRIPPER

FASTEST *in Action* **LOWEST** *in Price*

WRITE FOR TESTING SAMPLE OR ORDER
5-GALLONS AT DRUM PRICE

Specify whether dip or brush type is desired

Allied Finishing Specialties Co.
2641 W. Grand Ave. • Chicago 12, Illinois

Industrial FINISHING Editorial

August Paint Sales 9% Above July

The October 15, 1951 issue of *Facts for Industry*, from the U. S. Department of Commerce, gives detailed figures which represent sales (in dollars and cents value) of paint, varnish, lacquer and filler for August and July of 1951 and August 1950, as reported by 680 manufacturing establishments that produce these finishing materials.

In 1951, the August sales are up more than 9% above those for July 1951 but about 9% less than those for August 1950.

The sales of all classifications of paint materials were up in August 1951 from July 1951, but down from August 1950. However, the cumulative totals for the months of January to August inclusive show 1951 sales as being higher than those during the same period in 1950.

These figures are based on reports from 680 manufacturing establishments which account for about 90% of the total value of output by the entire industry.

Management-Foreman Meetings at Plant

To have meetings or not to have them; that is the question. Meetings between management and foremen once a week are often beneficial. Many small problems can be solved before they grow into big problems. If the meetings are properly planned in advance and correctly timed as to schedule, they will be not only beneficial to the entire organization, but they will be informative and inspirational for those who attend.

Next question is when to hold the meetings. Foremen are needed in their departments; otherwise production may suffer. Everybody is busy after working hours, too.

One small company solved this problem quite effectively. The concern was not large enough to have a cafeteria, so on a certain day each week the management arranged with a local caterer to deliver and serve a light lunch in one of the display rooms. Immediately following luncheon the meeting was held for 30 minutes. Occasionally, just for a change, an industrial film would be shown for the first 15 minutes while the men were eating. Also, for a

Almost as if by MAGIC!

It's startling to see the RANSBURG No. 2 Electrostatic Process in operation

The paint particles are so tiny they're hardly visible as they leave the head where they are simultaneously atomized and charged electrostatically. However, the articles being coated take on color, right before your eyes — ***almost as if by magic*** — as they move along the conveyor line past the Ransburg unit.

The new RANSBURG No. 2 Electrostatic Process eliminates wasted paint . . . makes possible new economies, new efficiencies heretofore unattainable. The No. 2 Process cuts paint and labor costs . . . increases production rate with improved quality . . . greater uniformity.

NO OVERSPRAY TO BE EXHAUSTED
NO COMPRESSED AIR USED
NO OPERATOR SKILL REQUIRED

● *Get the facts. Write for a copy of our brochure containing complete data on the RANSBURG No. 2 Process.*

RANSBURG ELECTRO-COATING CORP.

Indianapolis 7, Indiana

RANSBURG

ty-d Hand Protector

A Protective Hand Cream Especially Formulated

for . . . Persons handling Polishes, Paints, Varnishes, Lacquers, Stains, Inks and Adhesives.

- Does not irritate, dry or crack the skin.
- Readily removed with soap and water.

FREE!! FULL SIZE SAMPLE.
Write
COMPO CHEMICAL CO.
Incorporated
MANSFIELD, MASS.

DISTRIBUTORS WANTED: Good territories open to men calling on finishing field.

"Wood Graining"
ADDS
Eye Appeal

American Graining Plates are photographic reproductions of fine woods.

AMERICAN RICHWOOD PRODUCTS CO.
Graining Plate Division
104 E. Mason St., Milwaukee 2, Wis.

change, they would sometimes have a round table discussion during the luncheon period, with the superintendent acting as moderator. Subjects discussed did not always pertain directly to plant problems.

With the foregoing schedule the foremen were absent from their departments for only 15 minutes beyond the shop luncheon period and production was not affected. The scheme worked out pretty well all around.

What's Being Done About Research, Design, Sales?

We are being continuously bombarded with words about effecting savings in the production department, but there are other departments in every manufacturing business where savings are just as essential as in the production department. There are many ways to reduce costs. Let's look around.

What about the office: All sorts of labor saving devices are available—from dictating and duplicating machines, electric calculators and bookkeeping machines to electric auto-call systems and wired intercommunicating devices. All of these help to simplify and speed up routine office work, save needless steps and promote efficiency.

What about the unit cost of sales? Competent sales planning, coordinated with product and market research and designing, will do much to increase unit sales—get the volume up—and reduce unit costs. Training new salesmen is vitally important. Refreshing and revitalizing veteran salesmen is of equal importance.

It is true that for the most part we have always had competition with us—that is competition between similar products. But in this jet-propelled market today we not only have this same competition; we also have the

fellow with a new and different idea incorporated in a new product, and he may step in and virtually take the market out from under us. This is where product and market research and designing play a most important role. Increasing the volume of sales usually reduces the cost of sales per product—and the cost of production per product.

Keep Finish Supplier Advised About Changes

Don't let your supplier of finishing materials be even slightly in doubt about details of your present or proposed production procedure and schedules, or any changes therein. Remember, he is the one who formulates your coatings and specifies certain conditions under which they should be used to produce the best results for you. If you contemplate installing a paint heater in the line between the pressure tank, or the outlet of the circulating system and the spray gun, your supplier should be notified in advance.

If the temperature in your dry-off oven is allowed to rise to a point where part or all of your metal products are entering the spray booth at

Iridescol
PEARL ESSENCE
A natural product. Price f.o.b. Wilmington—$6.75 per pound. 4 ounce sample jar, postpaid—$2.50. (Enough to make one gallon lacquer)
IRIDESCENT PIGMENT CORP. of AMERICA
P. O. Box 1605 Wilmington, Del.

America's No. 1 Production Finish
NEW PERIOD

Coast-to-coast you'll find New Period Production Finishes on the job supplying better looking, longer lasting finishes to a wide range of products. Why not try these superior finishes in your plant.

- Fillers and Stains
- Lacquers—Clear and Semi-Gloss
- Sealers
- Lacquer Enamels—Flat and Gloss
- Synthetic Enamels

Write for 5 Gallon Working Sample at Drum Price

MANUFACTURERS OF FINE WOOD AND METAL PRODUCTION FINISHES

NEW PERIOD Production Finishes

NEW YORK WOODFINISHERS' Supply Co.
109 IMLAY STREET BROOKLYN, N. Y.

SOLVENTS RECOVERED BY
THE LOFGREN PROCESS

We RECOVER YOUR
SOLVENTS & THINNERS

From Wash Thinners - Spoilt Lacquers - Degreasing Machine Sludge, etc.

Each customer's shipment, whether one drum or a carload, receives PROPER AND SEPARATE TREATMENT. Write to:

SOLVENTS RECOVERY SERVICE, INC.
101 Central Ave., Westfield, N. J.
OR
HAMMOND SOLVENTS RECOVERY SERVICE
241 Brunswick St., Hammond, Ind.

say 125° F., instead of 80° or 90° F., your supplier should be advised. According to his laboratory records it may not make any difference if the metal temperature is 35° to 40° higher, but on the other hand, perhaps he will advocate the use of less solvents.

Combining a higher temperature product and a paint heater certainly deserves the closest cooperation between the supplier and the user of finishing materials to obtain the best looking, most durable and most economical finish.

Permolite Corrosion Protection New Descriptive Folder

A new bulletin, describing "Low Cost Corrosion Protection" has been published by Permolite, Inc., Hamilton, Ohio. The 6-page folder explains Permolite pigmented organic corrosion resistant coatings and their application by brush, spray or dip . . . air-dried or baked.

Pictures of various products and equipment protected with Permolite are shown, together with a list of typical applications. Illustrations and a description of the manufacturer's custom-coating plant are included. The coatings may also be applied in users' plants.

In the folder, the manufacturer also offers an experimental service, in which test panels or actual parts are coated and returned to the inquirer for test purposes. There is no charge or obligation for this service.

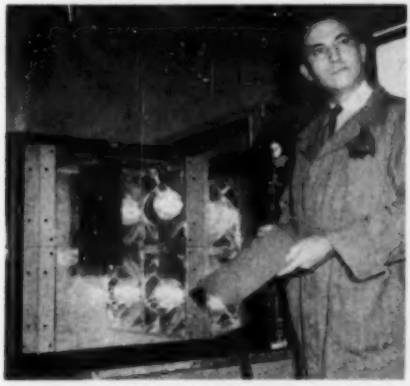
Hercules Makes Paul O'Neill St. Louis Sales Representative

Hercules Powder Co. announces the appointment of Paul A. O'Neill as St. Louis sales representative for the Naval Stores Department. He will replace Joseph M. Carbonara, who has transferred to the Export Department in Wilmington to handle sales of Hercules products in Cuba, Venezuela, Mexico, and Colombia.

In his new assignment, Mr. O'Neill will supervise the sale of such Hercules products as rosin and terpene chemicals, turpentine and toxaphene in the St. Louis territory. He studied chemistry at Drexel Institute of Technology, Philadelphia, and has been associated with the Naval Stores Department of Hercules in Wilmington since 1931.

S-W Uses Model Size Cabinets to Instruct Salesmen

To train field sales personnel under actual operating conditions, the Industrial Division of The Sherwin-Williams Co. is using two sets of scale model bake ovens



This scale model bake oven is one of the accessories which Technician Larry Muse of the Industrial Division of The Sherwin-Williams Co., is using in conducting a nation-wide series of training courses for industrial sales personnel.

Finco

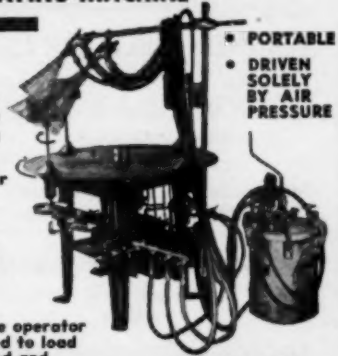
COMBINATION STAIN - FILLER

New—Different—Unusual

This new combination stain-filler cuts finishing time 33 1/3%. Wipes easy—can't turn gray—won't fade, won't shrink. Investigate today!

FINISHING PRODUCTS CO.
3725 East 13th Street
Indianapolis 1, Indiana
Mfrs. of stains—fillers—sealers—lacquers since 1920

HOLLAND
automatic-pneumatic.
SPRAYING MACHINE



- PORTABLE
- DRIVEN SOLELY BY AIR PRESSURE

Production up to 1000 pieces per hour

Uses regular exhaust booth

Only one operator is needed to load unfinished and remove finished work.

Write for FREE folder "S"

J. HOLLAND & SONS, INC.
MANUFACTURERS - DEALERS
276 SOUTH NINTH ST - BROOKLYN N Y

S-Y TRADE MARK

Filler

For a perfect base for lacquer, varnish or shellac, use Stille-Young Spee-D-Dry Filler—the original fast drying filler. Easy to apply, easy to work. May be brushed, sprayed or dipped. Wipes off clean and sharp above the wood pores, producing a perfectly filled, clean, smooth surface—without streaks or cloudiness. Try it!

Phone—Write—Wire!

STILLE - YOUNG

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2752 N. CLYBOURN AVE., CHICAGO 14

Finishing Equipment-Systems

PLANNED, BUILT, INSTALLED

Dip • Flow • Spray

✔ AUTOMATIC

✔ MANUAL

✔ CONVEYORIZED

May we suggest to you low cost top quality production methods?

Morrill and Renshaw Inc.

Finishing-Coating-Spraying Engineers

624 N. GREEN ST.

CHICAGO 22, ILL.

Manufacturers of Baking Ovens, Washing Machines, Spray Booths

and spray booths in a coast-to-coast training program.

Two model ovens and booths are required to permit Technician Larry Muse, who is directing the course, to move from one meeting city to another and be assured that his equipment, fully assembled, is awaiting him. The cabinets and spray equipment are shipped in a "leap-frog" operation over his itinerary.

Not only does Muse demonstrate the how-to-do-it techniques in applying the Brown Label line of industrial product finishes, but he requires each of the industrial sales representatives to participate actively during training sessions.

The nationwide field organization, totaling approximately 600 salesmen who operate out of 500 branch stores, will be instructed in the application of all the versatile finishes that constitute the Brown Label line, from metal preparation to the final finish and from white wood in furniture to the top coat.

The training courses opened at Newark, N. J., October 23 and will be held in 16 key cities, with the final meeting in March 1952.

DeVilbiss Men Promoted

D. V. Perry, Eastern district manager of the DeVilbiss Co., has been named to the position of assistant sales manager of the company's spray painting and finishing division. Mr. Perry's office is at the company's main plant in Toledo.

C. B Gracely, manager of the DeVilbiss office at Houston, Texas, has been promoted to the post of Eastern district manager. His office is at the company's branch in Newark, N. J. He will supervise sales activities in the eastern territory which includes the New England States, New York, New Jersey, Delaware, Maryland, the eastern part of Pennsylvania and a large section of Virginia.

Both men are veterans in the DeVilbiss spray painting and finishing equipment sales division and have a wide knowledge of trade requirements.

Mr. D. V. Perry and Mr. C. B. Gracely

Plated Effect Coatings

- NO DYES OR BRONZE POWDERS USED
- NON SETTLING — NON JELLING
- SUPERIOR ADHESION TO PRACTICALLY ALL SURFACES
- EXCELLENT LUSTRE & REFLECTIVITY.

ANOTHER NATIONAL EXCLUSIVE

NATIONAL LACQUER & PAINT CO., INC.
7415 S. GREEN ST. • CHICAGO 21, ILL.

SEND FOR FREE BULLETIN

United Lacquer to Triple Research Facilities

In order to better serve America's expanding manufacturing program, now stimulated by defense needs, the United Lacquer Mfg. Corp. will triple its research facilities at Linden, N. J.

The firm's research expansion will be accomplished by the construction of a new laboratory building and by taking over an area in an existing factory building now used for other purposes.

"Industry's increasing demand for quality finishes and protective coatings prompted our decision to enlarge the company's research and development program," it was explained by Saul Cantor, vice-president.

"An important objective of the expanded research facility will be to originate new materials for government agencies, particularly for defense projects," Mr. Cantor continued.

Special development projects also will be instituted in behalf of the textile printing, laminating, and plastics industries, he said. Work in behalf of the building, electrical, furniture and wood products industries will be continued.

In addition to conducting general research and formulation of new materials, United Lacquer makes its facilities available for solving customers' specific finishing problems.

The new laboratory building will be a modern structure, with all the newest improvements in equipment.

PAINT STRIPING TOOL

NEW EYE APPEAL FOR YOUR PRODUCT— LITTLE OR NO LABOR COST!

Amazing new Paint Striping Tool makes it easy to do expert striping. Paints straight, curved, circular or evenly spaced parallel lines simply and easily. Simply fill Tubular Glass Paint Fountain with paint or lacquer and Knurled Wheel Tip feeds paint evenly. Tips interchangeable — 1/64", 1/32", 3/64", 1/16", 5/64", 3/32", 1/8"—jaws split apart for easy cleaning.

Use For STRIPING
- FURNITURE
- TOYS
- BICYCLES
- BOATS
- SCOREBOARDS
- LAMPSHADES
- AUTOS
- SIGNS
- CERAMICS AND ALL PAINTED OBJECTS

DEALERS—MASTER PAINT STRIPING TOOL packed in display cartons of 1 doz. Fast, profitable seller. Write for illustrated circular, discounts.

WEHDELL MFG. CO.
Dept. 911, 4234 N. Lincoln
Chicago 18, Illinois

IDEAL TACK RAGS
FOR A PERFECT FINISH
Immediate Delivery
IDEAL CHEMICAL COMPANY
1689 Lee Road Cleveland 18, Ohio

Nick Milicia is Made I.F.S.M. of Pennsylvania Lacquer Center

Sergeant Nick Milicia has returned from active duty with the United States Marines in Korea and has been oppointed Industrial Finishes Sales Manager by Harry Griver, President of the Pennsylvania Lacquer Center (Lacquers for Wood and Metal), 145 N. 4th St., Philadelphia, Penna.

Al. Pastes; Gold Bronze P'd'rs.

The appointment of American Mineral Spirits Co., 155 E. 44th St., New York, N. Y., as distributors of MD Aluminum Pastes and MD Gold Bronze Powders, is announced by Metals Disintegrating Co., Inc., Elizabeth, N. J., manufacturer of metal pigments, metal powders and metal abrasives.

The territory covered by this appointment includes: the New York area, New Jersey, Eastern Pennsylvania, Maryland, Delaware and the District of Columbia.

DUST-ALL Tack Rag

for better, cleaner finished jobs

Remove the specks, lint, dust from surfaces to be painted; wipe them off with a Dust-All Tack Rag; be sure of fine, blemish-free, finished jobs.

Get the Dust-All Tack Rag in the familiar Red Checkered Bag; also available in 150-250-500 yard rolls.

HARDING Manufacturing Co.

10618 GRATIOT AVE.
DETROIT 13, MICH.

RESTORE PAINT IN 2 MINUTES

PER GALLON WITH
MIRACLE BLUE - BOY
5 GALLON
PAINT REJUVENATOR

Paints, lacquers and enamel products can be restored to their original consistency without opening the can. Units available to handle from ¼ pint to 50 gallon drums. Immediate delivery.

Originators of paint rejuvenating equipment---sixteen years—thousands of satisfied users.

Write for folder & prices

MIRACLE PAINT REJUVENATOR CO.
128 E. 10th Street St. Paul 1, Minn.

Hot Spray Solarium at Paint Industries Show

Visitors to the Paint Industries Show at Atlantic City, N. J., Oct 28-31, found much of interest and informative value when they stopped at the Hot Spray Solarium.

This spectacular display was a cooperative effort sponsored by raw material and equipment suppliers, featuring hot spray application of decorative and protective coatings. The exhibit showed a wide variety of hot spray applications, emphasizing the tremendous potential market for hot spray finishes.

Sponsors of the Hot Spray Solarium included the following: Bede Products, Inc., Binks Mfg. Co., Carbide & Carbon Chemicals Corp., Commercial Solvents Corp., The DeVilbiss Co., Dualheet, Inc., Hercules Powder Co., Inc., Pol-Flo Paint Sprayer Co., Reliable Products Mfg. Co., Shell Chemical Corp. and Spee-Flo Co.

Commercial Solvents Advances Frank E. Maple

Frank E. Maple has been appointed Assistant General Manager of the Industrial Chemicals Division of Commercial Solvents, it is announced by W. Ward Jackson, General Manager of the division.

Mr. Maple joined Commercial Solvents in 1936 following graduation from the University of Illinois with a B.S. in chemistry. He was assigned to the Production Department and later served in the Research Department before entering the Sales Department's Technical Service Division. He joined the Industrial Chemicals Division in 1949.

He is a member of the American Chemical Society, American Institute of Chemists, Society of Chemical Industry, and the Salesmen's Association of the American Chemical Industry.

PINHOLING PROBLEMS on wood panels?

Many concerns use "LiquaFill Sizing"

For information, write

THE LIQUAFILL MFG. CO.
823 Richard St. Dayton 3, Ohio

Charles W. Spehrley Joins Yarnall Paint Co.

B. F. Swackhamer, Vice President of Yarnall Paint Co., announces the appointment of Charles W. ("Bud") Spehrley as the company's Eastern Pennsylvania Sales Representative.

Mr. Spehrley has had many years of experience in the paint business and is a welcome addition to the firm's sales force.

Fine Rustproofing Technique Explained in New Bulletin

Rustproofing small iron and steel parts (bolts, nuts, washers, hinges) by the phosphate coating process, preceded by cleaning and followed with an oil coating treatment—all on a controlled economical production basis—are described and illustrated in an 8-page bulletin 8¼x11-in., printed in two colors, and offered free by Detrex Corp., Box 501, Detroit 32, Mich.

Ely, V. P. in Charge of Sales for Randolph Products Co.

The appointment of Thurston V. V. Ely as vice-president in charge of sales of Randolph Products Co., manufacturer of industrial coatings, lacquers and synthetic products, was announced recently by W. G. Randolph, president of the firm. The company's offices and plant are located at Carlstadt, N. J.

Mr. Ely who has been a vice-president of the organization since 1946, was previously in charge of sales in the New York City area. His promotion now puts him in charge of the over-all sales program of the company which is presently supplying production finishes to customers throughout the world.

Mr. Ely has been with the firm since 1934. He is a graduate of Cornell University. Prior to joining the Randolph Products Co., he was in the importing business in South America. He is a resident of Rutherford, N. J.

WHICH SOILS ARE HARDEST TO REMOVE?

- ☐ oils and greases
- ☐ rust, oxides
- ☐ rust preventives
- ☐ drawing compounds

FREE Write Oakite Products, Inc., 32F Thames St., New York 6, N. Y., for copy of *"Some good things to know about Metal Cleaning"*

SPECIALIZED INDUSTRIAL CLEANING

OAKITE

MATERIALS • METHODS • SERVICE

Technical Service Representatives Located in Principal Cities of United States and Canada

TOMORROW'S Products Tested TODAY

A service to aid industry in producing longer-lasting and better-looking products. Quick predetermination of durability and permanency by actual exposure test in South Florida. Write us today for full information.

SOUTH FLORIDA TEST SERVICE
EST. 1931
4201 N. W. 7th St. Miami 34, Fla.

CLASSIFIED ADVERTISING

The rate on ads appearing in this department is $1.00 per line of 6-pt. light face type, per insertion. Minimum charge, $5.00. Ads set in 8-pt. extra bold face type cost $2.00 per line, per insertion. Regular display advertising rates apply on fractional page display ads running in this department. Rate card on request.

INDUSTRIAL SALESMAN AVAILABLE.

Young man for Western Pennsylvania area. Thoroughly familiar with all types of Industrial Finishes including heavy maintenance items and production finishes. Address IF-846, care Industrial Finishing.

FINISHING ROOM FOREMAN WANTED

For store fixture plant in Pittsburgh, Penna. Must be good color man and know stains and fillers. Finishing department approximately 8 men. Highest grade work required. References required. Salary approximately $90 per week, depending on qualifications. Address IF-844, care Industrial Finishing.

FINISH DEPARTMENT FOREMAN WANTED.

Permanent position with long established radio and television cabinet plant, located in midwest. Applicant must have at least 10 years experience in complete charge of Finishing Department. Must be capable of supervising up to 150 people. State past experiences; type and make of cabinets manufactured. Give complete details in letter. Address IF-845, care Industrial Finishing.

B. S. CHEMIST WANTED,

Or Chemical Engineer, experienced in formulation of organic protective coatings for development of Industrial finishes. Excellent opportunity for advancement. In reply give detailed personal data, educational background and formulation experience. Write or phone: George Neumann, Jones-Dabney Co., 1481 S. 11th St., Louisville 8, Ky. Phone Magnolia 6900.

CHEMISTS WANTED.

Excellent opportunity is extended to two B. S. Chemists or Chemical Engineers, one experienced in the formulation of industrial enamels and the other sufficiently experienced and qualified in the formulation of nitrocellulose lacquers to be a group leader. Please send a resume of formulation experience, academic training and personal facts. Lower mid-west location. All replies to be held strictly confidential. Address IF-837, care Industrial Finishing.

WANTED.

Top Grade Wood Lacquer and Stain Chemist, by medium sized midwest manufacturer. We have pension plan, good working conditions and a fine reputation. Will pay top salary to the right man who can expand and improve our wood finishes line. Address IF-836, care Industrial Finishing.

SALESMAN WANTED.

Experienced Industrial Salesman selling vinyl, lacquer, synthetic finishes. Wonderful opportunity. Old established progressive company near Philadelphia. Territory, Eastern Pennsylvania and New Jersey. Apply in detail. Strictly confidential. Address IF-843, care Industrial Finishing.

EXPERIENCED SALESMAN

Of furniture lacquers and industrial finishes wanted, by favorably located firm in Los Angeles area. Excellent opportunity. Address IF-852, care Industrial Finishing.

INDIANA SALESMAN WANTED.

Practical and experienced man wanted as industrial sales representative for metal finishing materials. THE LOWE BROTHERS CO., Industrial Divn., 424 E. Third St., Dayton 2, Ohio.

EASTERN SEABOARD SALESMAN.

Well-known manufacturer of metal finishing materials wants an industrial sales representative. Experienced practical man required. Address IF-847, care Industrial Finishing.

SALESMAN WANTED

To represent fast growing Chicago Industrial Paint Manufacturer to sell production finishes in Northern Indiana, Illinois and Metropolitan Chicago. Replies held confidential. Address IF-829, care Industrial Finishing.

SALESMAN WANTED.

Manufacturer of a full line of industrial finishes requires a trained Industrial Salesman. Must locate in St. Paul or Minneapolis. Established accounts. Salary, bonus, and expenses. Must have automobile. State qualifications in detail. Confidential. Address IF-848, care Industrial Finishing.

DO YOU SELL SPRAY FINISHING EQUIPMENT?

An expanding 23-year-old manufacturing company desires active sales representation. Will pay high commission in protected territory to qualified man. Line is complete with high acceptance in established territories. Our representatives know of this ad. Address IF-849, care Industrial Finishing.

SOLVENT CLEANING SERVICE.

Dirty lacquer solvent can be shipped to us for distillation and returned to you clean and ready for use. Within 200 mile radius of Louisville a substantial economy can be realized. Cost runs from 14c to 19c per gallon. KENTUCKY COLOR & CHEMICAL CO., 600 N. 34th St., Louisville 12, Ky.

DISTRICT SALES MANAGER
OHIO AREA

To market metal treating compounds; phosphating materials, cleaners, rust removers, strippers.

We want an aggressive man with a solid technical background and good contacts in manufacturing plants. The competition is tough, but you will be selling a superior product. Excellent opportunity with growing organization. Please write fully—all replies will be held in strict confidence. Sales Manager, OCTAGON PROCESS, INC., 15 Bank St., Staten Island 1, N. Y.

VARNISH MANUFACTURER

With 2,000 gallon stainless steel kettles, is interested in large volume business. Also have Hi-Speed Roller Mills to grind pigment goods. We would like to contact either salesmen who have accounts or plants direct and are in a position to buy quantities. Have semi-trailer trucks to deliver any place in the United States. FRANK GILL CO., Wisconsin Rapids, Wisc.

WANTED:
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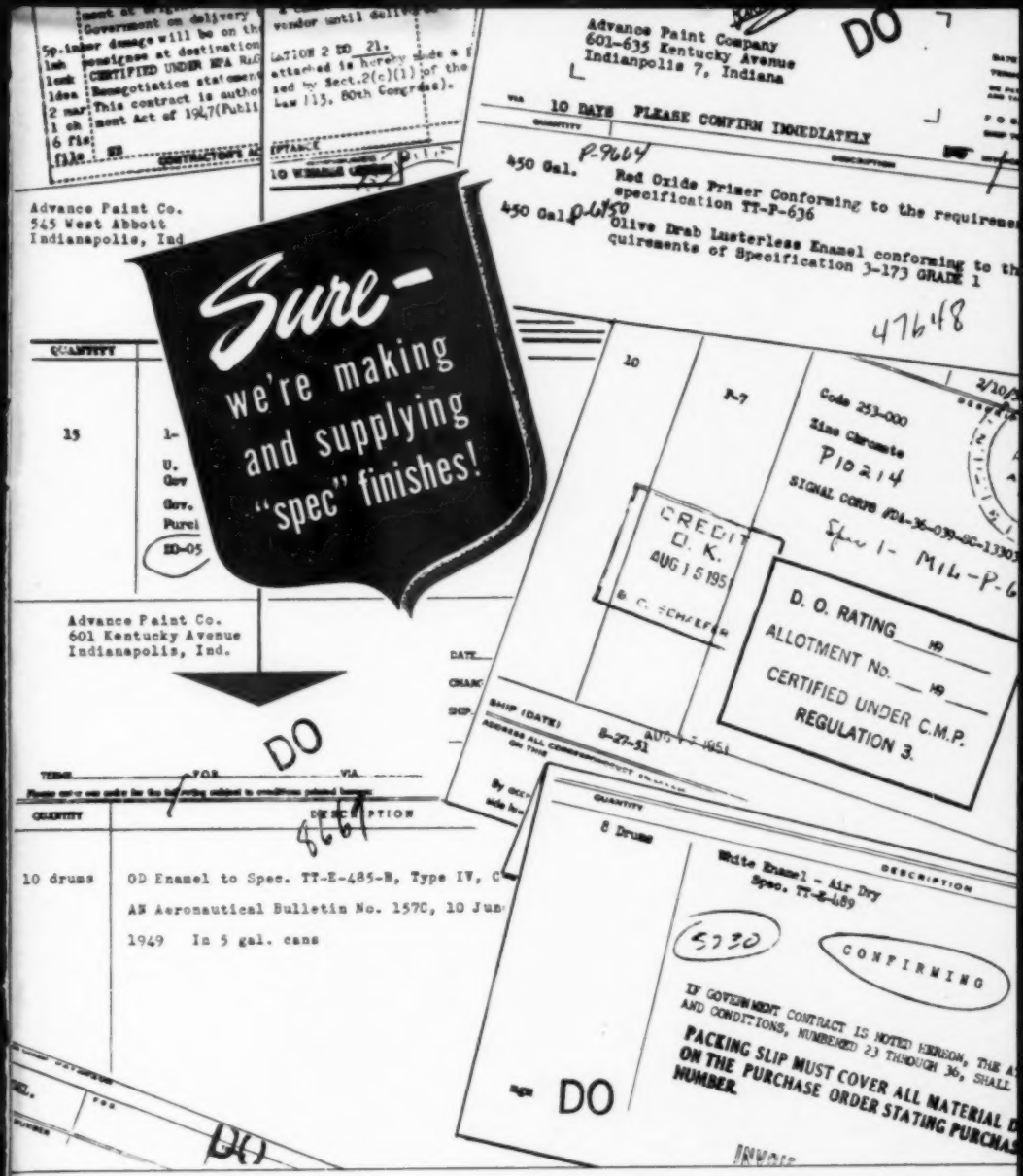
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